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# Stratification of clinically vulnerable people for COVID-19 risk using antibody testing

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| **Submission date**<br>10/11/2023 | **Recruitment status**<br>No longer recruiting | [_] Prospectively registered<br>[X] Protocol<br>[X] Statistical analysis plan<br>[_] Results<br>[_] Individual participant data<br>[X] Record updated in last year |
| **Registration date**<br>07/10/2024 | **Overall study status**<br>Ongoing | |
| **Last Edited**<br>14/05/2026 | **Condition category**<br>Infections and Infestations | |

## Plain English summary of protocol

Background and study aims

The STRAVINSKY study is for people who either have a medical condition which may increase their risk of developing a serious COVID-19 infection or a condition which affects their ability to produce a strong antibody response to COVID-19 vaccines. Because of this, we would like to investigate whether antibody levels predict the risk of COVID-19 infection. We plan to recruit patients with different conditions to see if protection differs in each and why. Although the COVID-19 vaccination program has proven very successful for most people, clinically vulnerable patients remain at a higher risk of COVID-19 despite vaccination. We have previously identified patients who have had little immune response to COVID-19 vaccines, and those at highest risk of severe COVID-19. There is some evidence that the antibody response to vaccination is a critical factor in COVID-19 outcomes but it is not clear whether this is true in all clinically vulnerable groups and there appears to be a lot of variation between individuals even those with the same condition. It may be that other parts of the immune system or specific underlying health conditions or particular medicines or individual features such as age are as important as antibodies and this study will investigate which factor or combination of factors predicts an individual's risk.

Who can participate?

Patients aged 18 years or older with chronic lymphoproliferative disorders, plasma cell disorders, myelodysplastic syndrome (MDS) or myeloproliferative neoplasms (MPN), sickle cell disease, thalassaemia, or rare inherited anaemias, active malignancy diagnosed within 2 years of study consent (excluding non-melanoma skin cancer, non-invasive bladder cancer and localized squamous cell carcinoma of the cervix), Down's syndrome and learning disability, neurological diseases (Parkinson's and multiple sclerosis), HIV, common variable immunodeficiency and secondary immunodeficiency (requiring prophylactic antibiotics and/or immunoglobulin), cirrhosis, chronic respiratory conditions, chronic kidney disease (CKD) stage 4-5, diabetes mellitus (types 1 and 2), cardiac failure, previous recipients of a solid organ transplant (SOT), recipient of a haematopoietic stem cell transplant (HSCT), recipient of B-cell depleting treatment, recipient of systemic anti-cancer therapy e.g. chemotherapy or immunotherapy and others, recipient of radiotherapy, autoimmune disease on systemic immunosuppressive* medication.

What does the study involve?
Before you decide to participate, we will ask you to read all of the information in a patient information sheet and sign the consent form. The consent form for this study will be online and you can access this via a link that will be issued to you by email when you have indicated to the study team that you would like to take part. Should you want a paper consent form, please ask your local study team whose details are towards the end of this information sheet and they will post this to you. If you decide to take part in the study, there are two pathways you can choose from and the choice is entirely yours. You can either:
1. Attend four appointments face-to-face with your local clinical team at the hospital. If you choose to attend face-to-face appointments, you will have the option to either sign the online consent form or be consented at your first appointment with your local study team. If you wish to do this, you will be asked on each occasion to provide:
1.1. Blood samples - approximately 60 ml of blood (around 4 tablespoons) will be taken from your vein. We will undertake a COVID-19 antibody test on this sample.
1.2. Saliva test - this will require you to drool into a vial for up to 4 minutes.
1.3. Nasal secretion test - synthetic absorptive matrices (nasal swab) will be inserted in nostrils for 60 seconds to collect fluid.
The above procedures will be performed each time you attend an appointment which will be a minimum of four visits. On the first visit you will be asked about your medical and treatment history, whether you have suffered from COVID 19 and your vaccination history. For the further visits, you will also be asked about any COVID-19 infections or vaccinations and whether your medical conditions or treatments have changed. Before considering this route of participation, please ensure you are comfortable and able to attend these appointments. Travel expenses for these visits will be reimbursed.
2. Or, you can join the study remotely. You will be able to sign the consent form online. The central study team will then send you a home sampling kit, called a dried blood spot, this allows you to prick your own finger and collect spots of blood. This will be issued to your home address to complete without attending any hospital visits. You will return this dried blood spot to the central study team and COVID antibodies will be measured from this by a laboratory test. A dried blood spot sampling kit, return packaging and instructions on how to use and return this kit will then be issued to your home address. You will have access to a video of how to complete the dried blood spot kit enclosed with your instructions. You will also be sent a link so you are able to tell us when you have returned the dried blood spot kit. This will enable us to know when we might receive your completed kit and if we should send you another one should it get lost in the post. Completing the dried blood spot kit will take approximately 30 minutes to collect the blood spots, allow your sample to dry and complete the return packaging. Details of how to do all of this will be in your instruction pack Should you at any point feel you are having any problems completing your dried blood spot kit or you do not feel comfortable doing this alone, please contact your local study team and they will arrange an appointment for you and take this sample face to face. For both pathways, after consenting to take part in the study, you will be asked to provide your contact details (full address, contact number, NHS number if you know it, and GP information) to allow us to contact you and check your medical and vaccination details. If you are using the online consent form, after you have signed, it will take you to another page to provide these details. However, if you choose to be consented face to face at an appointment, the study team will ask you for this information. This will take approximately 5 minutes to complete Once you have consented and provided your contact details, a member of your study team will call you and take your medical history details over the phone. This phone call will take approximately 30 minutes. If you choose face-to-face appointments, you will have the option to provide your medical history details at this appointment.
At the beginning of the study, we will ask you to call the central study team should you at any point during the study, test positive for COVID-19. You will then be sent a COVID-19 swab test kit, return packaging and details of how to complete this test kit. We will ask you to use this

when you test positive for COVID-19, please complete the swab kit using the instructions and return it to us. Again, you will be asked to provide the date you have returned the sample using your online link and the date you have tested positive for COVID-19. We will send you a swab test every 2 weeks until you test negative on two occasions. We are doing this because some clinically vulnerable patients carry the virus for a longer time than individuals with a healthy immune system. We will genetically type the virus to see if it changes when someone is infected. You also have the option to call the central study team to inform them that you have tested positive for COVID-19. They will then take your details and send you a swab testing kit in the post.
We may ask you to complete swab and dried blood spot tests again should your kits be returned with not enough sample to process. During the study, you will be asked three times to fill in a questionnaire to understand whether your medical conditions or medications have changed and to check that you haven't suffered a COVID-19 infection. If nothing has changed, you will not need to do anything further, if they have changed significantly, you will be called by a member of the study team to ask you about these changes.
Throughout the study, you will be kept in contact with the study team about how the study is progressing, to see if you are happy with your ongoing participation in the study and to offer any support you need with the study. You will be contacted with your antibody test results, and to get information on any new vaccinations you may have had. You will be asked to provide the dates of your vaccinations and types of vaccinations. Should you not remember the dates and types of your vaccinations, we will be asking for your consent to use your NHS number to access the National Immunisation Vaccination System (NIVS system). This will allow us to access your vaccination information to use in this study.

What are the possible benefits and risks of participating?
You will receive your STRAVINSKY blood spot antibody test results and any COVID-19 swab test results by text message through the third-party distributor FIRETEXT within a couple of weeks of you returning them in the post. If you do not have a mobile phone number, your results will be sent directly to your home address via letter. You will be provided with helpful and easy-to-understand links to explain your results in detail.
Having a blood or finger-prick sample taken can lead to discomfort and bruising when the blood is taken. A nose and throat swab can be uncomfortable and can make you feel like you are gagging. If you swab too hard you can damage the nose or throat and this may cause local bleeding.

Where is the study run from?
University of Birmingham (UK)

When is the study starting and how long is it expected to run for?
June 2023 to May 2027

Who is funding the study?
National Institute for Health and Care Research (NIHR) (UK)

Who is the main contact?
Central study team: stravinsky@contacts.bham.ac.uk

# Contact information

### Type(s)
Public, Scientific, Principal investigator

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# Additional identifiers

**Integrated Research Application System (IRAS)**
325967

**Central Portfolio Management System (CPMS)**
56768

# Study information

**Scientific Title**
Stratification of clinically vulnerable people for COVID-19 risk using antibody testing (STRAVINSKY)

**Acronym**
STRAVINSKY

**Study objectives**
Although the COVID-19 vaccination program has proved extraordinarily successful, clinically vulnerable (CV) patients remain at risk of SARS-CoV-2 infection, severe COVID-19 and death. Large (inter)national studies have previously identified patient groups who generate sub-optimal immune responses to COVID-19 vaccines, and those at highest risk of severe COVID-19. Although the precise immune correlates of protection against severe COVID-19 are not defined and this may be different in different patient groups. Recent emerging data in patient groups suggest that the serological response to vaccination is a critical determinant in COVID-19 outcomes. In this study we will i) perform a retrospective meta-analysis using previous studies to enhance stratification of patient groups for clinical risk and ii) assess if SARS-CoV-2 serological responses to COVID-19 vaccines can be used to risk stratify CV people for COVID-19 clinical outcomes.

**Ethics approval required**
Ethics approval required

**Ethics approval(s)**

approved 15/06/2023, East of England - Cambridge central (2 Redman Place, London, E20 1JQ, United Kingdom; +44 (0)207 1048285; cambridgecentral.rec@hra.nhs.uk), ref: 23-EE-0129

## Study design
Multicentre prospective observational cohort study

## Primary study design
Observational

## Study type(s)
Diagnostic, Efficacy

## Health condition(s) or problem(s) studied
Clinically vulnerable people with COVID 19

## Interventions
Identification:
Individuals will be identified from previous studies (where consent allows) and from hospital clinics by both clinical care and research teams and individuals can self refer. Identified individuals will be sent a patient information sheet (electronic or paper) to consider whether they would like to take part in the study. If they would like to take part they will contact the central study team by email or phone. This will enable the study team to open a Study identification (ID) for them. This will be sent to the participant preferably electronically but this can be enabled remotely by telephone or in person if required.

Consent:
Individuals will log on to a secure database with their Study ID and complete the consent form. Participants will provide their name, date of birth, main health condition that makes them vulnerable to COVID infection, and their contact details including email, mobile phone number and address.

Visit 1:
This visit will occur as soon as practicably possible after an individual has consented.
The consent will trigger an alert to the central and local study team to book a telephone consult with a member of the study team. Together they will complete an online record of the individuals medical and drug history and their covid infection and vaccination history. It will also ask whether they are planning to have further vaccinations.
Individuals will be either sent a dried blood spot test to complete at home and return to a central laboratory in the post (remote group) or will attend to have samples taken in hospital (in-person group).
Remote group samples: individuals will complete a finger prick test in their own home and return this in a pre-paid envelope. They will be asked to logon to the data base using their study ID (or can email/call the study team if prefer) to confirm they have returned a sample.
In-person group samples: individuals will attend and have a blood sample taken from a vein by a trained phlebotomist. Participants will also provide a saliva sample by drooling into a pot for 4 minutes and a nasal sample which is achieved by placing a swab in the nose for 1 minute.

Visit 2:
This visit will occur before any booster campaign commences.
Individuals will be contacted through their preferred route (email or letter or telephone) and

asked to complete a short online survey on (or paper alternative if preferred) confirming if they have had any COVID infections or vaccinations since last visit. Also to indicate whether there have been any changes to their medication or have developed any new illnesses. If this is the case the local study team will be able to look up their records and add this information and if further clarification required the patient will be contacted.
All remote group patients will be sent and asked to return a dried blood spot test. They will be asked to logon to the data base using their study ID (or can email/call the study team if prefer) to confirm they have returned a sample.
All in-person group patients will attend an appointment to have the same samples taken as per Visit 1. They will be contacted by the study team to make this appointment.

Visit 3:
This visit will occur 4-10 weeks after booster.
All individuals will be asked to complete the survey as described in visit 2 and the same samples as per visit 1 collected for the remote and in-person groups.

Visit 4:
This visit will occur approximately 6 months after booster but before any further vaccines.
All individuals will be asked to complete the survey as described in visit 2 and the same samples as per visit 1 collected for the remote and in-person groups.
This is the last visit but individuals will remain under active follow up until the end of the study in case they suffer a COVID-19 infection.

If a participant tests positive for COVID-19:
We are not routinely monitoring for COVID-19 infection but these patient groups still have access to home lateral flow tests to detect COVID-19 virus. If they do test positive we ask that patients either contact the study team directly to enable and two weeks after the infection to send a swab.
Both groups will be sent a swab and pre-paid envelope and packaging to return to the central study team should a participant test positive for COVID-19 infection. This swab will enable the team to monitor the length of time the participant has infection for. The return of the swab will alert the central study team to send swabs to the patient every 2 weeks until they test negative on 2 swabs for COVID-19 virus.
When the individual is recovered we will ask the individual to complete an online survey about their infection and whether they received any treatments or were hospitalised.

If a participant chooses not to be vaccinated:
We will request samples at similar time windows to those that have been vaccinated for comparison.

## Intervention Type
Other

## Primary outcome(s)
The predictive value of SARS-CoV-2 spike serology measurements for COVID-19 clinical outcomes (infection rates and disease severity) in CV people, measured using Dry Blood Spot (DBS) kit in the remote cohort, and venous blood, saliva and nasal samples in the face-to-face cohort at up to four timepoints over 12-18 months.

## Key secondary outcome(s))

1. The vaccine responses of clinically vulnerable patients to bivalent or other vaccines given during the study period 2023 onwards, measured using a DBS (Dry Blood Spot) kit in the remote cohort, and venous blood, saliva and nasal samples in the face-to-face cohort at up to four timepoints over 12-18 months
2. The functional activity of anti-spike IgG antibodies against new SARS-CoV-2 variants in clinically vulnerable patients during the study period 2023 onwards, measured using a DBS (Dry Blood Spot) kit in remote cohort, and venous blood, saliva and nasal samples in the face to face cohort at up to four timepoints over 12-18 months
3. Retrospective analysis using pre-existing data from large national studies that may further inform the patient groups that will be enrolled in the prospective study

### Completion date
15/05/2027

## Eligibility

### Key inclusion criteria
1. The individual meets the diagnostic or treatment criteria below:

Disease-related groups (n = 120-140 per group):
1.1. Chronic lymphoproliferative disorders (footnote 1)
1.2. Plasma cell disorders (footnote 2)
1.3. Myelodysplastic syndrome (MDS) or (myeloproliferative neoplasms MPN) (footnote 3)
1.4. Sickle cell disease, thalassaemia, or rare inherited anaemias
1.5. Active malignancy diagnosed within 2 years of study consent (excluding non-melanoma skin cancer, non-invasive bladder cancer and localized squamous cell carcinoma of the cervix)
1.6. Down’s syndrome and learning disability
1.7. Neurological diseases (Parkinson's and multiple sclerosis) (footnote 4)
1.8. HIV
1.9. Common variable immunodeficiency and secondary immunodeficiency (requiring prophylactic antibiotics and/or immunoglobulin)
1.10. Cirrhosis (footnote 5)
1.11. Chronic respiratory conditions (footnote 6)
1.12. Chronic kidney disease (CKD) stage 4-5 (footnote 7)
1.13. Diabetes mellitus (Type 1 and 2)
1.14. Cardiac failure (footnote 8)

Treatment-related group (n = 120-140 per group):
1.15. Previous recipients of a solid organ transplant (SOT) at any time
1.16. Recipient of a haematopoietic stem cell transplant (HSCT) within 52 weeks at the time of study consent
1.17. Recipient of B-cell depleting treatment within 52 weeks at the time of study consent
1.18. Recipient of systemic anti-cancer therapy e.g. chemotherapy or immunotherapy and others ongoing or within the last 26 weeks at the time of study consent
1.19. Recipient of radiotherapy ongoing or within the last 26 weeks at the time of study consent
1.20. Autoimmune disease on systemic immunosuppressive* medication ongoing or within the last 26 weeks at the time of study consent

Footnotes:
1. Any chronic/indolent/low-grade B or T-cell lymphoproliferative disorder e.g. follicular

lymphoma, chronic lymphocytic leukaemia, lymphoplasmacytic lymphoma etc
2. e.g. myeloma, plasma cell leukaemia and AL amyloidosis and excluding monoclonal gammopathy of undetermined significance (MGUS)
3. Includes myelodysplastic syndrome, myeloproliferative neoplasms, myelofibrosis and chronic myelomonocytic leukaemia
4. Any rare neurological and severe complex neurodisability e.g. multiple sclerosis, motor neurone disease, myasthenia gravis, Huntingdon's disease, and also Parkinson's disease.
5. Cirrhosis Child-Pugh class A, B and C
6. Under long-term secondary care for a chronic respiratory condition for example and not limited to bronchiectasis, chronic obstructive pulmonary disease, asthma, cystic fibrosis, interstitial lung disease, and pulmonary hypertension
7. eGFR less than 30 ml/min/1.73m2
8. Under long-term secondary care or community heart failure team for cardiac failure

2. 18 years or older
3. The individual must have the capacity to provide written informed consent or in cases where this is not possible, a legal representative who is able to make an informed decision on their behalf

### Participant type(s)
All

### Healthy volunteers allowed
No

### Age group
Mixed

### Lower age limit
18 years

### Upper age limit
150 years

### Sex
All

### Total final enrolment
2695

### Key exclusion criteria
1. Does not have a legal representative who is able to make an informed decision about consent to the study.
2. Individuals will be excluded if they have received any monoclonal antibody therapy against SARS-CoV-2 within the 26 weeks prior to the first study blood sampling (either as a treatment for infection or pre-exposure prophylaxis). Recipients of regular immunoglobulin therapy are eligible*.
3. Age less than 18 years.

### Date of first enrolment
01/08/2023

**Date of final enrolment**
31/05/2025

# Locations

**Countries of recruitment**
United Kingdom

England

Scotland

Wales

**Study participating centre**
-
-
-
England
-

# Sponsor information

**Organisation**
University of Birmingham

**ROR**
https://ror.org/03angcq70

# Funder(s)

**Funder type**
Government

**Funder Name**
National Institute for Health and Care Research

**Alternative Name(s)**
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

### Funding Body Type
Government organisation

### Funding Body Subtype
National government

### Location
United Kingdom

## Results and Publications

### Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study will be published as a supplement to the results publication.

### IPD sharing plan summary
Published as a supplement to the results publication

### Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Participant information sheet | Participant information sheet | 11/11/2025 | 11/11/2025 | No | Yes |
| Protocol file | version 3.0 | 18/03/2024 | 02/10/2024 | No | No |
| Statistical Analysis Plan | version 3.0 | 18/03/2024 | 02/10/2024 | No | No |
| Study website | Study website | 11/11/2025 | 11/11/2025 | No | Yes |