

# COVID-CNS

THE COVID-CLINICAL NEUROSCIENCE STUDY

## INTRODUCTION

The COVID-19 Clinical Neuroscience Study (COVID-CNS) is a £2.3m UKRI study jointly led by researchers at the University of Liverpool and King's College London. The study is addressing the urgent need to understand the biological causes of brain complications in hospitalised COVID-19 patients.

### Conditions we are researching:

- Stroke
- Brain infections and swelling of the brain
- Movement disorders
- Delirium
- Psychiatric disorders

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## KEY STUDY INFORMATION:

**Study dates:** 23 October 2020 - 21 October 2022

17 NHS sites involved  
818 participants recruited

## PARTICIPANT STATISTICS:

**Age:** mean 54.7 (IQR 46-65)

**Gender (identified):** 61% Male, 38.1% Female

**Ethnicity (simplified):**  
Asian 3.1%, Black 10.0%, Mixed 3.3%,  
Other 7.9%, White 75.7%

*"I was treated very professionally by staff. They were welcoming and relaxed which made it easier for me to relax as I didn't know what to expect from this research."*



### RESEARCH ACCESSIBLE TO ALL:

Our key aim is to reach under-represented groups. The team have adapted access to fit participants' needs so they can be part of the study.

#### Different approaches include:

##### Access issues

- Aural consent form produced for visually impaired participants
- Evening sessions to fit around work schedules
- Arranging travel for participants unable to pay before attending their session
- Working alongside care-givers to ensure both parties' needs are met
- Giving anxious participants alternative ways to provide samples
- Phoning participants with no internet or computer access to support completing the online follow-up questionnaires.

*"I am visually impaired and the team created a consent form that I could hear rather than not knowing what I was signing."*

##### Extra caring responsibilities

- Moving session times to fit around childcare needs
- Holding shorter sessions
- Providing a calm and suitable environment for participants caring for young children and adults with learning disabilities.

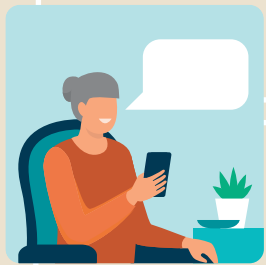


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## PATIENT JOURNEY

### 1. INVITED TO TAKE PART



*"The team really took me and my needs into mind."*

*"I've been signposted to relevant services by the team."*

### 3. IN PERSON SESSION

Take bloods, complete assessments, Cognitron, MRI brain scan



*"The staff make you feel at ease, they keep you informed, let you know what to expect – even in the scanner they prepared me and said if you feel uncomfortable to press a button."*

### 2. CONSENT

### 4. FOLLOW UP SESSIONS

Online or over the phone assessments including Cognitron



*"I enjoyed the Cognitron experience – it feels like a game but you have to use your thinking skills – logic and problem solving – it didn't feel too clinical."*



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## WHAT HAVE WE LEARNT SO FAR?



Spectrum, risk factors and outcomes of neurological and psychiatric complications of COVID-19: a UK-wide cross-sectional surveillance study

This nationwide study of 267 cases of neurological and psychiatric manifestations of COVID-19 during the first wave identified older age and a higher pre-COVID-19 frailty score to be associated with poor outcome. The most common complication found was Cerebrovascular (blood flow to the brain) and affected young as opposed to older patients.

### THE LANCET Child & Adolescent Health

Neurological manifestations of Covid-19 infection in UK hospitalised children and adolescents: a prospective national cohort study

Overall, neurological and psychiatric manifestations appear to be four times more common in hospitalised children and adolescents than in hospitalised adults with COVID-19 in the UK.

## PLOS ONE

Reliability of multi-modal MRI-derived brain phenotypes for multi-site assessment of neuropsychiatric complications of SARS-CoV-2 infection

Magnetic resonance imaging (MRI) of the brain is a key tool for understanding the neuropsychiatric complications of COVID-19. The COVID CNS Travelling Heads study assessed and optimised the reliability across sites of the different MRI methods used in COVID CNS, ensuring the consistency and quality of collected brain data.

Journal of  
Neurology, Neurosurgery  
& Psychiatry

Considerations for causality assessment of neurological and neuropsychiatric complications of SARS-CoV-2 vaccines: from cerebral venous sinus thrombosis to functional neurological disorder

We reviewed brain and central nervous system reactions to COVID-19 vaccination and concluded that such reactions are extraordinarily rare, but we might expect conditions like functional neurological disorder (which is wholly reversible), to arise in a small minority of recipients. We emphasised the importance of correctly and confidently identifying when the vaccine was and wasn't responsible for possible reactions, and provided clinicians with practical advice on how to do this.



*"I hope you come up with answers to what has been a very worrying situation for the whole world."*

### BMJ Neurology Open

Guillain-Barré syndrome following SARS-CoV-2 vaccination in the UK: a prospective surveillance study

We studied the features of Guillain-Barré syndrome (GBS) following SARS-CoV-2 vaccines and looked for a causal link between the two. More cases were observed in those who received adenovirus-based vaccine as opposed to other vaccines. However, the overall prognosis was good and the estimated risk was low. We advised that clinicians should remain vigilant to the possibility of this rare adverse event.



Brain Injury in COVID-19 is associated with dysregulated innate and adaptive immune responses

We can assess illness by measuring proteins in blood called biomarkers. We investigated the biomarkers of brain injury in 175 patients admitted to hospital with COVID-19 and 45 with Influenza. Our results showed that the brain injury markers associated with changes to immune responses due to COVID-19 were high during hospitalisation and continued at this level up to 4 months later.

### PLOS GENETICS

Proteome-wide Mendelian randomization identifies causal links between blood proteins and severe COVID-19

This study analysed over 3,000 blood proteins and found that certain proteins are linked with severe COVID-19 and hospitalisation. By targeting those proteins that decrease the risk of severity it could lead to new therapeutic methods being used.



Consensus Clinical Guidance for Diagnosis and Management of Adult COVID-19 Encephalopathy Patients

A practical guide to help clinicians with the assessment, investigation, and both acute and long-term management of encephalopathy, a common condition among patients hospitalized with COVID-19. This guidance has been reviewed and agreed by the Global Neuro Research Coalition.



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## BUT WE ARE NOT JUST STOPPING HERE!

Building on the work of COVID-CNS we want to establish a longitudinal study over 3-5 years. We want to find out who develops central nervous system complications at the time of having COVID-19, how does this occur, and crucially, what does this mean for brain recovery on the aging brain, and what are the potential treatments? So watch this space!

To find out more about the study visit

[www.covidcns.org](http://www.covidcns.org)

Making a difference for  
patients in COVID-19 research



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