Inquiry into Long COVID – Scottish Parliament's COVID-19 Recovery Committee.

Overview of the Chief Scientist Office (CSO) research call on the longer-term effects of COVID-19 infection.

Chief Scientist Office – Scottish Government.

February 2023

Within the Scottish Government, the Chief Scientist Office (CSO) has policy responsibility for health research, development and innovation.

As part of the Scottish Government's response to the pandemic CSO launched a funding call in October 2020, seeking applications for research to investigate the longer-term effects of COVID-19 infection. The call particularly welcomed applications on diagnostic, prognostic and precision medicine approaches to long COVID-19 (defined as not recovering for several weeks or months following the start of symptoms); development and evaluation of treatment and rehabilitation strategies; research to increase the knowledge base around lived experience of long-term COVID-19 infection.

CSO received 35 applications by the call closing date of 9th November 2020. These applications were reviewed by 2 independent panels with expertise in the wide range of methods and specialisms covered by the applications and from a range of research institutions both in and outside Scotland and including lay members. Both panels were chaired by Professor Jon Nicholl, Chair of Health Services Research at the University of Sheffield. The panels met remotely on 2nd December 2020 (Panel A) and 4th December 2020 (Panel B). For each panel the same operational procedures were adopted. CSO's approach was to fund the top 3 ranked applications from each of Panels A and B. The remaining applications from both panels were then ranked together to enable the funding decision process to be completed.

The process followed by CSO was assessed by Professors John Savill (University of Melbourne and Chair of CSO's Strategic Advisory Board) and John Iredale (University of Bristol and Chair of Main Panel A Research Excellence Framework 2021) who were asked to give an independent view on the process followed by CSO together with Professor Nicholl. They concluded that the process followed and criteria used were appropriate, and had allowed robust review of the applications submitted. Furthermore, the outcome was a programme of projects meeting the aim of establishing a broad Scottish programme of high quality research on long-COVID-19 that could inform policy and clinical practice on responding to this aspect of the pandemic.

A total of 9 projects were funded with a total funding commitment of £2.466 million. Details of these projects are provided as Annex A.

In the wider UK research funding landscape, two long-COVID specific calls were launched in 2020 from:
(1) National Institute for Health and Care Research (NIHR) / UK Research and Innovation (UKRI)
(2) National Institute for Health Research (NIHR).

Both calls were open to applications led from Scotland. The NIHR/UKRI call announced in February 2021 that 4 projects funded totalling £18.5m had been funded. The NIHR call announced in July 2021 that 15 projects funded totalling £19.6m had been funded. Two of these 15 projects were Scottish-led:

Activity tracking and just-in-time messaging to improve adaptive pacing: a pragmatic randomised control trial – Prof. Nic Sculthorpe – University of the West of Scotland
ReDIRECT – Remote diet intervention to reduce Long-COVID symptoms trial - Dr Emilie Combet and Dr David Blane – University of Glasgow

In normal times, CSO considers research applications through its two grant funding committees. These each meet twice per year and their role is well known among the health and care research community.

The Health Improvement, Protection and Services Research Committee (HIPS) considers applications for research aimed at improving or protecting population health or improving the quality, safety and/or effectiveness of healthcare in Scotland. https://www.cso.scot.nhs.uk/grant-funding/response-mode-funding-schemes/health-improvement-protection-and-services-research-committee/

The Translational Clinical Studies Research Committee (TCS) considers applications for research aimed at improving treatments and / or diagnostic approaches for conditions of clinical importance to the population of Scotland. https://www.cso.scot.nhs.uk/grant-funding/response-mode-funding-schemes/translational-clinical-studies-research-committee/

Both the above committees welcome applications from across the entire clinical spectrum, including on long-covid.

Annex A: Overview of project funded through the Chief Scientist Office research call on the longer term effects of COVID-19 infection.

COV/LTE/20/04
Amplifying the voices of people with lived experience to improve understanding, support, treatment and education. Share-to-improve: Long Covid experience (COv-VOICES) Study
University of Stirling
Professor Kate Hunt
£299,883

COVID-19 is a new virus. Media stories often talk about the numbers of people who die from COVID-19, or about people who are hardly affected and recover quickly. We will conduct a study of the experiences of people who have a range of symptoms that sometime last for months after catching COVID-19. This is called 'Long Covid'. We will use our findings to produce a reliable online resource with practical information and support for people with Long Covid and their families and carers, and information that can be used to train doctors, nurses, social care and other healthcare workers.

In our detailed interviews with people with Long Covid, we will ask them about their symptoms, the services they used, the information, support and care needs they have, and how Long Covid has affected their lives. Our findings, with video, audio and written clips from the interviews, will be freely available on a website (www.healthtalk.org/), which has won many prizes for being a source of patient experiences of health and illness that people can trust. We will also be able to compare the experiences of people in our studies with people who live in other countries, and with other studies.

Details of Papers Published to date

Negotiation of collective and individual candidacy for long Covid healthcare in the early phases of the Covid-19 pandemic: Validated, diverted and rejected candidacy:
https://pubmed.ncbi.nlm.nih.gov/36507117/

COV/LTE/20/06
Defining and understanding the longer-term effects of COVID-19: A mixed methods study exploring the frequency, nature, and impact of 'long COVID' in the Scottish population
University of Glasgow
Professor Jill Pell
£299,562

Most people with COVID-19 recover within three weeks, but some don't. Our study will identify how many people continue to be unwell, their symptoms, and how it their lives. Scottish adults who had a positive COVID-19 test, and a negative test comparison group, will be sent an SMS message inviting them to take part in the study. If they agree, they will use an app to answer questions about their health before and after COVID-19, and any effect on their lives. They will answer the questions again 12, 18, and 24 months after testing. Their health records will tell us if they have been in hospital or taking medicines. This can be done without us knowing their name or speaking to them. They will be asked if they agree to be contacted directly. Some who agree will have one-to-one interviews to discuss, in more detail, the impact of COVID-19 on their health and relationships. We will also ask for their suggestions on what help they need. Anyone can refuse to take part, or withdraw from the study, at any time. Patients with lived experience of COVID-19 symptoms will be members of a steering group providing advice during the project.

Details of Papers Published to date

Outcomes among confirmed cases and a matched comparison group in the Long-COVID in Scotland study: https://pubmed.ncbi.nlm.nih.gov/36224173/

Do we need consent to obtain consent? Public and participant feedback to using personal health data for: https://pubmed.ncbi.nlm.nih.gov/35672086/

COV/LTE/20/08
COVID-19: Tracking Persistent Symptoms in Scotland (TraPSS)
University of the West of Scotland
Professor Nicholas Sculthorpe
£239,358

We know that people respond very differently if they become infected with COVID-19. Some people need to be admitted to hospital, while others have no symptoms at all. After treatment, some people find that their symptoms can carry on for a long-time, even if their initial symptoms were mild. Research into this effect, often called 'long-COVID' has found that it affects very different numbers of people in different studies. This means that in order to help Scottish patients recovering from COVID-19 infection, we need to study long-COVID in Scotland. Therefore, this project aims to improve our understanding of Long-COVID in the Scottish population, and particularly in people whose original symptoms were relatively mild. We will review the current evidence describing the types of symptoms other studies have reported, and we will survey people at different stages of recovery to find out what kinds of persistent symptoms they have. Finally we will follow people who have recovered from a COVID-19 infection for 9 months to see how many people have long term symptoms, what symptoms persist, and for how long.

Details of Papers Published to date

More Than 100 Persistent Symptoms of SARS-CoV-2 (Long COVID): A Scoping Review: https://www.frontiersin.org/articles/10.3389/fmed.2021.750378/full

COV/LTE/20/10
Prevention and early treatment of COVID-19 long term effects: a randomised clinical trial of resistance exercise
University of Glasgow
Professor Colin Berry
£286,660

Many people have long-lasting symptoms after COVID-19, such as breathlessness, fatigue and chest pain. So far, research studies of treatments for COVID-19 have focused on the life-threatening acute illness; few studies look at treatments to improve long-term health after COVID-19. COVID-19, particularly when this requires a hospital admission, can lead to weight loss and muscle wasting, contributing to worse outcomes. Muscle strengthening (resistance-based) exercise could improve outcomes in the long-term.

We are looking to do two things:

1) To undertake a research trial of pragmatic resistance-based exercise for 220

people recovering from COVID-19.

2) Create a platform for rapid trials of new treatments after COVID-19. This will cut the costs of doing future trials and allow more patients the opportunity to contribute to medical research that will improve outcomes for people recovering from COVID-19.

Our team is multidisciplinary, multi-ethnic, gender-balanced and drawn from across NHS Scotland, and the University of Glasgow. We are currently leading the CISCO-19 study, funded by the CSO, in the West of Scotland, using medical imaging of the hearts, lungs, and kidneys of patients, to understand the impact of COVID-19. We have consulted with members of the public, including people with COVID-19, in designing this study.

Details of Papers Published to date

Prevention and early treatment of the long-term physical effects of COVID-19 in adults: design of a randomised controlled trial of resistance exercise—CISCO-21:
https://pubmed.ncbi.nlm.nih.gov/35971155/

The Janus of COVID-19: from registry data to prospective studies:
https://pubmed.ncbi.nlm.nih.gov/34166487/

COV/LTE/20/15
Developing and validating a risk prediction model for long COVID-19
University of Edinburgh
Professor Aziz Sheikh
£189,659

Most patients with coronavirus disease 2019 (COVID-19) recover within a few weeks. However, around 10-20% of people continue to have symptoms that last for many weeks or months. These ongoing symptoms can involve different parts of the body, including the heart, lungs, nervous system and they may also result in mental health problems. It is still unclear which patients will develop these long-term problems also sometimes known as “long-COVID”.

Our team has been involved in developing a calculator for the UK and Scottish Governments to identify people at risk of serious COVID-19 that results in hospital admission or death. We now plan to build on this and develop the world’s first calculator to identify who is at greatest risk of developing long-COVID. We will do this by analysing data from a unique COVID-19 data platform that we have created, which securely holds information on 5.4 million people (~99% of the Scottish population). We will work with the Scottish Government and NHS leaders to make this calculator available for routine clinical use, which will offer opportunities for the more focused and efficient targeting of resources to reduce the long-term risk of disability and death from COVID-19

Details of Papers Published to date

Deriving and validating a risk prediction model for long COVID-19: protocol for an observational cohort study using linked Scottish data:
https://pubmed.ncbi.nlm.nih.gov/35793922/

Symptoms and signs of long COVID: A rapid review and meta-analysis: https://pubmed.ncbi.nlm.nih.gov/35596571/

COV/LTE/20/26
Clinical phenotyping to enable targeted treatment of persistent cognitive symptoms after COVID-19
University of Edinburgh
Professor Alan Carson
£290,941

People with 'Long Covid' describe memory and concentration problems. Studies examining how people perform on memory and intelligence tests have found that patients who have had COVID-19 perform worse than those who have not. But to date, we don't know why they have poorer cognitive function.

Memory and concentration symptoms in 'Long Covid' are likely to have different causes in different people. Some may have had direct infection or inflammation of the brain, or blockages to blood vessels in the brain. In others, underlying brain disease may have been 'unmasked' by COVID-19. Some may have functional cognitive disorders, where memory and concentration problems are the result of changes in the brain's 'software'. In others, anxiety, low mood or fatigue may contribute to their symptoms. Each of these conditions has a different outcome and treatment.

This study aims to closely examine 100 people with persisting cognitive symptoms after COVID-19, assessing the cognitive problems as well as markers of brain damage, inflammation, and underlying degenerative brain disease.

Details of Papers Published to date

'What is Brain Fog?': https://jnnp.bmj.com/content/early/2022/12/06/jnnp-2022-329683

Structural epitope profiling identifies antibodies associated with critical COVID-19 and long COVID: https://www.medrxiv.org/content/10.1101/2022.07.11.22277368v2

Functional cognitive disorders: clinical presentations and treatment approaches: https://pn.bmj.com/content/early/2022/12/08/pn-2022-003608

COV/LTE/20/28
Longer term impact of COVID-19 infection people with diabetes
University of Glasgow
Dr Robert Lindsay
£295,201

People with diabetes have suffered greater adverse consequences of COVID-19 in the acute phase of infection during the pandemic. Whether they also have increased susceptibility to longer term sequelae is unknown. Such knowledge is critical to public health approaches to management of the pandemic in these populations. We will build on the excellent available surveillance of the population of people with diabetes in Scotland using the existing SCI-diabetes platform, used already to accurately detail short-term outcomes.

Current research during the COVID crisis has highlighted that to the end of July 2020, 2724 people with diabetes had Covid-19 (positive test, admission or death certificate) of whom 988 had unfortunately died. This means more than 1736 people with diabetes in Scotland may be living with the consequences of Covid-19. Assessment of the long term holistic impact on people with diabetes cannot be approached using routine data collated from electronic health records and so we propose to use the resources of the Scottish Diabetes Research Network (SDRN) to collect information through questionnaires and clinical examination on a range of outcomes in people with diabetes compared to the general population of people with diabetes.

COV/LTE/20/29
Evaluating emerging models of community rehabilitation for people experiencing the effects of long-COVID to inform responsive service delivery across Scotland
Robert Gordon University
University of Stirling
Professor Kay Cooper (RGU)
Dr Edward Duncan (UoS)
£296,545

Studies estimate that 10–35% of people with COVID-19 experience disabling clinical symptoms following the acute phase of their illness (long-Covid). Scottish Government figures estimate that there are already 5,330-18,655 citizens with long-Covid, many of whom are likely to require support to recover. Community rehabilitation, delivered by physiotherapists, occupational therapists and other health professionals, is a well-established approach to enabling people to maximise their quality of life and recovery. However, community rehabilitation for people with long-Covid is in its infancy.

There are considerable differences in how community rehabilitation for people with long-Covid is currently delivered across Scotland. We want to assess which models of community rehabilitation are most appropriate, in which circumstances. We will evaluate the delivery and outcomes of four different models of community rehabilitation for people with long-Covid currently being delivered in Scotland. This will help us to identify which models are more suitable, for which patient groups and in which contexts. We will then hold online workshops with community rehabilitation mangers, service leads and others from across Scotland.

During the workshops, we will present our findings and support participants to develop evidence-based action plans to improve their local long-Covid community rehabilitation services.

Details of Papers Published to date

A national survey of community rehabilitation service provision for people with long Covid in Scotland: https://pubmed.ncbi.nlm.nih.gov/33953912/

COV/LTE/20/32
Lived experience of long term COVID-19 on NHS workers in health care settings in Scotland: a longitudinal mixed methods study
Robert Gordon University
Dr Nicola Torrance
Dr Aileen Grant
£294,605

Many NHS workers have greater occupational risk of exposure to COVID-19 than the general population. UK studies found the risk of healthcare workers testing positive for COVID-19 was seven times higher than for non-essential workers. In Scotland healthcare workers and their households contributed to a sixth of cases admitted to hospital.

This study aims to establish the nature and extent, and lived-experiences long COVID on the health and well-being on a self-identified cohort of professional and ancillary staff in NHS Scotland. We plan to use a longitudinal mixed methods approach, collecting data over a one-year period. A rapid review of the literature on the longer-term effects of COVID-19 will guide the development of an online questionnaire survey which will be used to examine self-reported health status, working lives, and other key factors in affected individuals. Subgroups of NHS workers will then be invited to take part in qualitative interviews designed to capture their narrative accounts of living with long COVID. Stakeholder workshops, where we will share emerging findings, will engage with occupational health and human services, professional bodies and training establishments.

The findings will help to inform policy, practice and research recommendations, including NHS workforce planning needs.