

COVID-19 FUNDED RESEARCH PROJECTS IN FOCUS



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Key Findings:

Long COVID

Other names: *POST-acute COVID, Post-COVID Syndrome, Chronic COVID and Long haul COVID, Post-Acute Sequelae of SARS-CoV-2 infection (PASC)*

Number of Long Covid projects:

175

Funding investments (known funding amounts):

\$217.8m

Top funder:

NIH

As the coronavirus pandemic evolves, there is increased interest in the emerging phenomenon, now commonly referred to as “long COVID”, which encompasses a wide spectrum of persistent and newly emerging multisystemic symptoms following COVID-19 infection. These include cough, fatigue, shortness of breath, alterations in taste and smell, depression and mood disturbances (1). Cardiac, pulmonary and renal sequelae may also follow COVID-19 infections. To date, there is a lack of consensus on a clear definition, diagnosis, clinical characterization and management, rehabilitation and appropriate support for sufferers in addition to difficulties in ascertaining its prevalence (1) (2) (3). Here, we present the scope of funded research activity focused on long COVID, drawing on evidence from the July 2022 update of the Living Mapping Review (LMR) of COVID-19 funded research projects and the UKCDR/ GLOPID-R [COVID-19 Research Project Tracker](#).

Methodology

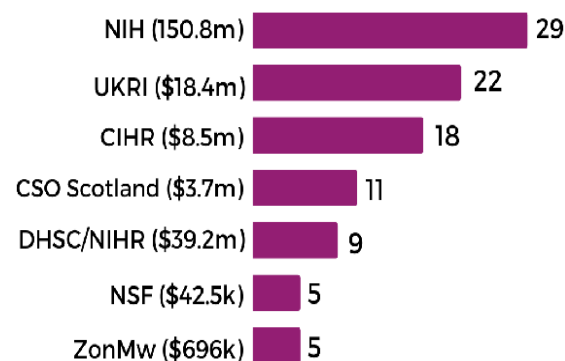
Descriptive and thematic analysis were done as outlined in the [LMR study protocol](#). Projects addressing long COVID were identified and key funders, funding amounts, country distribution of projects, specific research focus and study populations targeted were determined. Projects were also mapped to the long COVID priorities identified in the GloPID-R/ISARIC long COVID meetings held in December 2020.

Findings

Locations, funders and funding amounts

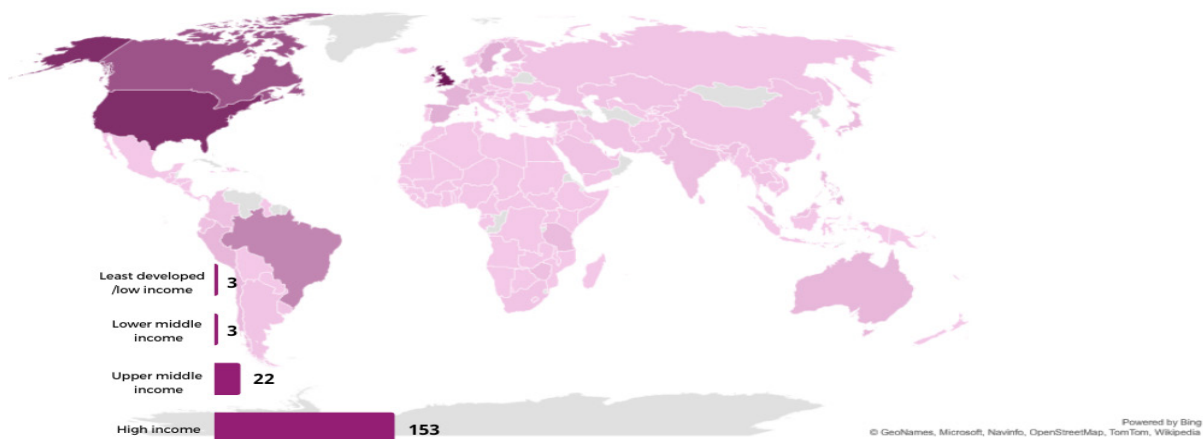
175 long COVID research projects representing a research funding investment of at least \$217.8 million were identified. The total funding amount identified is underestimated as funding amounts were available for only 62.9% of these projects. Of the 57 funders that have funded long COVID research, NIH has funded the most projects as shown in Figure 1. Figure 2 shows research projects involved in at least one of 45 countries, although one large CIHR-funded project alone took place across 27 countries. Ten of these projects involved at least two countries. Projects were largely concentrated in Europe (48%) and North America (38.9%).

Figure 1: Funders of Long COVID projects (funders of 5 or more projects shown)



*known funding amounts

Figure 2: Location of Long Covid projects



Research focus, WHO Research priorities and [long COVID research priorities](#) (identified at [the ISARIC & GLoPID-R long COVID forum](#))

Most projects focused on determining the spectrum of long COVID symptoms. Where specified, almost half of the projects assess brain and nervous system sequelae following COVID-19 infections and several studies focused on understanding the pathogenesis and risk factors for long COVID, as seen in Figure 3 and Table 1, respectively.

Interestingly, long COVID was not identified at the time the WHO Roadmap priorities were being set and this theme emerged out of the LMR analyses, predominantly within the “clinical characterization and management” priority area. However, long COVID projects now cut across most of the WHO priorities except for the ‘ethics considerations for research’ priority area.

Mapping the long COVID research against the WHO research priorities in Table 2 shows most projects investigate the pathogenesis of long COVID, followed by studies on improving the clinical care processes and identifying long COVID severity by population group. No projects assess the impact of vaccination on long COVID, and several studies focused on understanding virus characterization and epidemiology of long COVID. In addition, when the long Covid projects are mapped to the UN research roadmap for the Covid-19 recovery pillars, only 6.3% (11 projects) are included. Six of these projects are relevant to the pillar of social protection and basic services.

Study populations

Almost 90% of projects (154 projects) involve human subjects with several studies planned for recovered and infected patients. Both symptomatic and asymptomatic, hospitalised patients, and community populations were included in research projects. Although many projects provided non-specific study population details (Figure 4), more than half of the projects involved people recovered from COVID-19.

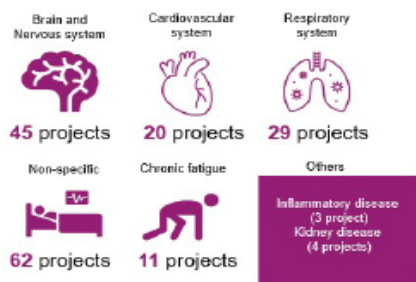
Two projects investigate long COVID pathogenesis in animals whilst others focused on digital innovations for the management of long COVID. Twenty-four projects are carried out in newly created or existing research cohorts pivoted for COVID-19 research and many of these investigated community cases of long COVID. Few projects involved children (eight projects) and the elderly (eleven projects) whilst few projects involved other vulnerable populations and frontline workers.

Table 1: Research focus of long Covid projects

Area of Capacity Strengthening projects	
Spectrum of long-term symptoms	60
Pathogenesis	55
Management	36
Risk factors	32
Prevalence	19
Diagnosis	9
Prevention	2

Figure 3: Organ / System research focus

Organ system



Some projects fall under more than one area

Figure 4: Study populations involved in long COVID research projects

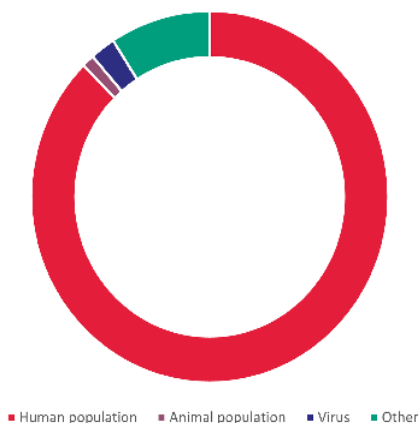


Table 2: Projects mapped to the long COVID research priorities identified at the ISARIC & GLoPID-R long COVID forum

WHO priority	Long covid sub-priorities	No. of projects
1	Characterise host immunity levels	17
	Virus characterisation and natural history	8
3	Susceptibility & infectivity of children to COVID-19	2
	Disease severity within population groups	9
	Transmission dynamics (pre-symptomatic/asymptomatic)	9
4	Improve processes of COVID-19 patient clinical care	48
	Pathogenesis of COVID-19	98
	Prognostic factors for severe disease by population group	30
6	Evaluate efficacy & safety of therapeutics by RCTs	1
	In vitro & vivo testing to identify drug candidates	3
9	Approaches for rapid & participatory engagement in pandemic responses	1
	Media & communication for COVID-19 information dissemination	1
	Clinical care & health systems for people providing care for COVID-19 patients	1
	Public Health approaches for COVID-19 prevention & control measures	4

* Some projects fall under more than one area

Discussion and conclusion

As the COVID-19 pandemic evolves, researchers and funders are adapting research priority areas to emergent needs, highlighted by the expanding spectrum of research activity to further understand long COVID. Several studies seek to identify risk factors and understand the pathogenesis of long-term sequelae to prevent these aftereffects or minimise their severity. Identifying the scope of long COVID symptoms will enable a comprehensive definition, diagnosis, and development of treatment protocols. More research projects involving individuals from LMICs is needed. We expect more research activity to address the remaining research gaps as the pandemic evolves.

Notes

Limitations of data and findings: Study protocol is outlined in Living Mapping Review of COVID-19 funded research projects. Analysis was limited by:

- o A lack of completeness of funding and/or qualitative data for some projects.
- o Tracker data is more likely to be derived from UKCDR and/or GLoPID-R funders.
- o The absence of commercial research.

References

1. Del Rio C, Collins LF, Malani P. Long-term Health Consequences of COVID-19 [Internet]. Vol. 324, JAMA - Journal of the American Medical Association. American Medical Association; 2020 [cited 2020 Nov 25]. p. 1723–4. Available from: <https://jamanetwork.com/>
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3. Mahase E. Long Covid could be four different syndromes, review suggests [Internet]. Vol. 371, BMJ (Clinical research ed.). NLM (Medline); 2020 [cited 2020 Nov 25]. p. m3981. Available from: <http://dx.doi.org/10.1136/bmj.m3981>

About the UKCDR/ GLoPID-R Tracker

The UKCDR/GLOPID-R COVID-19 Research Project Tracker (the Tracker) is a live open access database which categorises COVID-19 research activity funded around the world against the [WHO research priorities](#) outlined in the WHO Coordinated Research Roadmap. [COVID CIRCLE](#) has initiated a Living Mapping Review of these projects, published in Wellcome Open Research, to support funders and researchers in the achievement of a coherent response to this pandemic.

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Get in touch

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