

# WEBINAR

## Post COVID-19 condition: challenges for patient care in low- and middle-income countries

**THE WEBINAR WILL START SOON**

11:00 São Paulo | 15:00 Paris | 17:00 Nairobi | 19:30 New Delhi | 21:00 Bangkok



MODERATOR



MODERATOR



MODERATOR



SPEAKER



SPEAKER



SPEAKER



SPEAKER

## COVID-19 Clinical Research Coalition

# A GLOBAL RESEARCH RESPONSE TO COVID-19 DRIVEN BY THE NEEDS OF LOW RESOURCE SETTINGS

### Member commitments:

- Promote **open sharing** of research knowledge & data
- Leverage **global expertise** for high-impact **COVID-19** research
- Champion equitable & affordable **access** to COVID-19 vaccines, diagnostics & treatments



### MEMBERSHIP

- **235 institutional members** (506 representatives) from **69 countries**
- **396 individual members** whose institutions have not joined yet (**82 countries**)



### 13 TOPIC-SPECIFIC WORKING AND ADVISORY GROUPS

- in ethics, data management & sharing, clinical epidemiology, etc. to address pressing needs in and identified by low-resource settings



### COALITION OUTPUTS

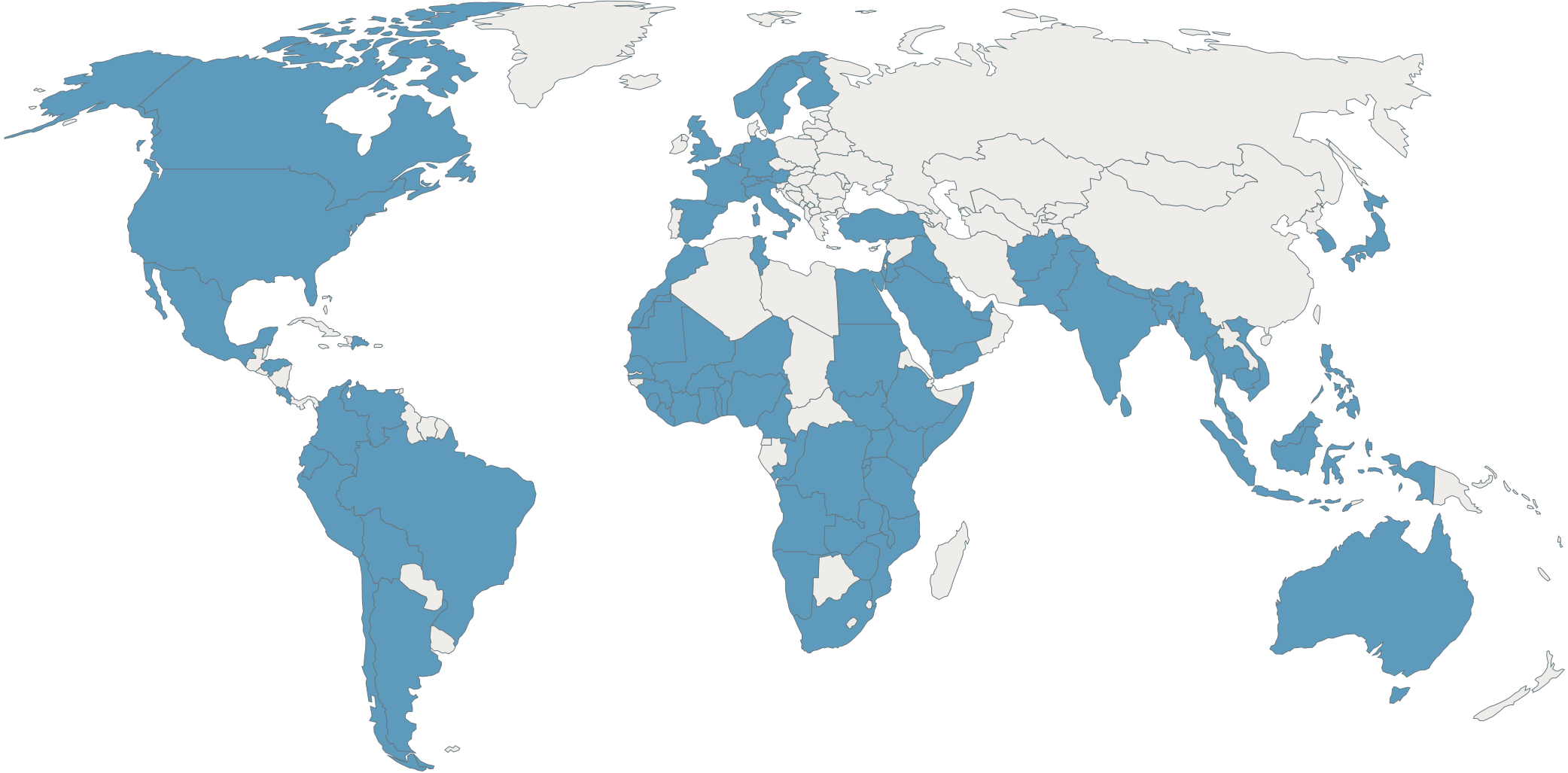
- Webinars/workshops
- Priority research questions
- Working group projects
- Op-eds, comments & articles
- Protocol repository

# Countries where coalition members are based

BECOME A  
COALITION  
MEMBER



[bit.ly/3AyL42D](https://bit.ly/3AyL42D)



# MODERATOR



## Dr Christine Sekaggya-Wiltshire

Mulago National Referral Hospital & Infectious Diseases Institute  
Uganda

Dr Sekaggya-Wiltshire is a Physician in the department of internal medicine at Mulago National referral hospital where she leads the haematology ward and is involved in the management of COVID-19 patients in the COVID-19 treatment unit.

She is a researcher at the Infectious Diseases Institute, Makerere University and has led observational studies and clinical trials related to anticoagulation, COVID-19, tuberculosis and antiretrovirals. In addition, Dr Sekaggya-Wiltshire is the vice-president of the Association of Physicians of Uganda.

# SPEAKER

*Co-chair of the coalition's Clinical Epidemiology Working Group*

**Prof. Juan Carlos Villar**

**Fundación Cardioinfantil & Universidad Autónoma de Bucaramanga  
Colombia**

Prof. Juan Carlos Villar is a clinical epidemiologist with background in preventive cardiology.

He is currently the head of research department at a Fundación Cardioinfantil – Instituto de Cardiología, a referral centre for cardiovascular medicine in Bogotá, Colombia.

He is also a professor in the Department of medicine at Universidad Autónoma de Bucaramanga, his hometown, where he teaches evidence-based medicine and is a director of a master's program in research methods. He is one of the co-chairs of the clinical epidemiology working group within the COVID-19 Clinical Research Coalition.



# SPEAKER



## Prof. Joan B Soriano

**Respiratory Service, Hospital de La Princesa  
Spain**

Prof. Joan B. Soriano works at the Dept of Respiratory Medicine of Hospital Universitario de la Princesa, and is Associate Professor of Medicine at Universidad Autónoma de Madrid, both in Madrid, Spain.

He has 400+ publications in PubMed and 10+ book chapters in the fields of clinical epidemiology and treatment of respiratory and tobacco-related disease, and a SCOPUS Hirsh index of 81 with 59,000+ individual citations. In May 2011 he received the Josep Trueta Award for scientific and medical achievements, and in 2014 he was appointed Foundational Fellow of the ERS and Fellow of Chest.

Prof. Soriano is active in COVID-19-related research, leading several research studies and clinical trials on Long Covid.

# SPEAKER

*Member of the coalition's Clinical Epidemiology Working Group*

## **Dr Agustín Ciapponi**

**Institute for Clinical Effectiveness and Health Policy (IECS)**  
**Argentina**

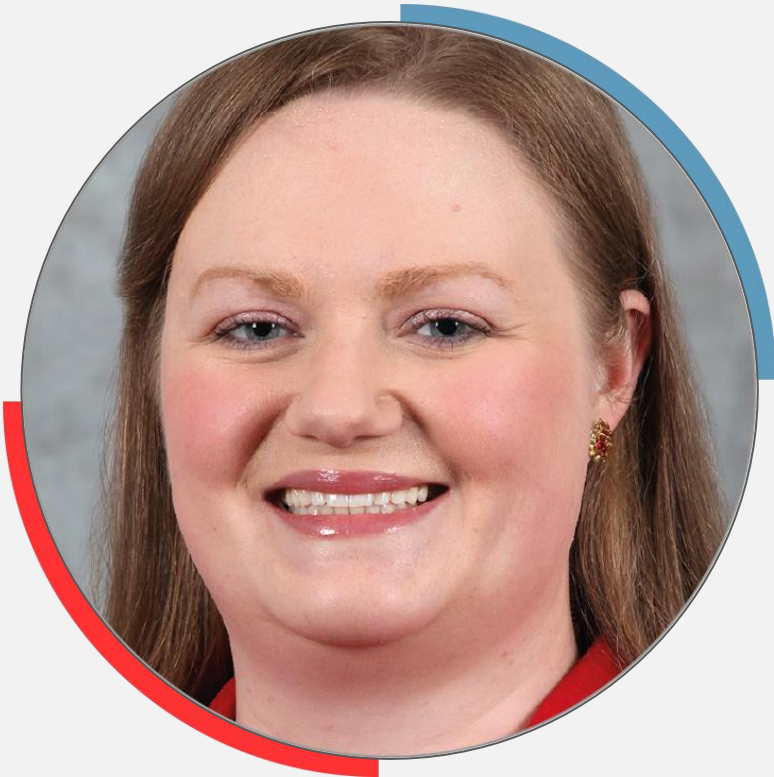
Dr Agustín Ciapponi is a family physician and a researcher with focus on evidence synthesis and knowledge translation. He is a Faculty Physician of the Community and Family Medicine Service at the Hospital Italiano de Buenos Aires.

He is a Magister of Clinical Effectiveness and a Doctor of Public Health from the University of Buenos Aires. He is the Cochrane Argentina Director and Principal Investigator at the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

His major expertise is the field of the Systematic Review & Meta-analysis.



# SPEAKER



## Ms Heather Stone

**United States Food and Drug Administration**  
**USA**

Ms Heather Stone is a Health Science Policy Analyst at the U.S. Food and Drug Administration, in the Clinical Methodologies Group of the Office of Medical Policy, Center for Drug Evaluation and Research. Ms. Stone joined the FDA upon completing her Master's in Public Health (Concentration: Epidemiology) from the University of Maryland School of Public Health in 2012.

Ms Stone's research focus is on the creation of policies that will encourage drug development for infectious diseases and address the rising challenge of antimicrobial resistance. She applies her policy expertise to issues related to drug repurposing, clinical trial design, and antimicrobial drug development.



# SPEAKER

## Dr Tanvir Ahmed

**SAJIDA Foundation**  
**Bangladesh & UK**

Dr Tanvir Ahmed's career in public health started as a medical doctor and later as a health system researcher. He has a master's in public health and a PhD in Development Studies from the Institute of Development Studies (IDS), University of Sussex, the UK.

For more than 13 years, he has worked in both Low- and Middle-Income Countries (LMICs) and High-Income Countries (HIC) as a researcher and his primary interest is to understand the disparity across various public health issues in relation to people's access to health and associated universal coverage of health (UHC) and how it can be improved especially in the resource-poor context..



# MODERATOR



*Co-chair of the coalition's Clinical Epidemiology Working Group*

**Prof. Richard Maude**

**Mahidol Oxford Tropical Medicine Research Unit (MORU)**  
**Thailand**

Prof. Richard Maude is Head of the Epidemiology Department at Mahidol-Oxford Tropical Medicine Research Unit, Bangkok, Thailand and Professor of Tropical Medicine at the Centre for Tropical Medicine and Global Health at the University of Oxford.

His research combines clinical studies, descriptive epidemiology, and mathematical modelling of human diseases in South and Southeast Asia, in particular malaria, dengue, novel pathogens including COVID-19 and environmental health.

He is a Fellow of the Royal Geographical Society, Royal College of Physicians and Royal Society for Public Health in the UK; Co-Chair of the COVID-19 Clinical Research Coalition Clinical Epidemiology Working Group.

# WEBINAR

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SPEAKER



SPEAKER



SPEAKER



SPEAKER


# WELCOME AND INTRODUCTION



## MODERATOR

**Dr Christine Sekaggya-Wiltshire**  
Mulago National Referral Hospital & Infectious Diseases Institute  
Uganda

# AGENDA

<b>15:00 (CET)</b>	<b>WELCOME AND OPENING REMARKS</b>
	<b>Dr Christine Sekaggya-Wiltshire</b> , Mulago National Referral Hospital & Infectious Diseases Institute   Uganda
<b>15:02 (CET)</b>	<b>BACKGROUND</b>
	<b>Prof. Juan Carlos Villar</b> , Fundación Cardioinfantil & Universidad Autónoma de Bucaramanga   Colombia
<b>15:08(CET)</b>	<b>A CLINICAL CASE DEFINITION OF POST-COVID-19 CONDITION BY A DELPHI CONSENSUS</b>
	<b>Prof. Joan B Soriano</b> , Hospital de La Princesa   Spain
<b>15:24 (CET)</b>	<b>POST-COVID 19 CONDITION IN ARGENTINA</b>
	<b>Dr Agustín Ciapponi</b> , Institute for Clinical Effectiveness and Health Policy (IECS)   Argentina
<b>15:30 (CET)</b>	<b>POTENTIAL OF REPURPOSED DRUGS AS TREATMENTS FOR LONG COVID</b>
	<b>Ms Heather Stone</b> , United States Food and Drug Administration   USA
<b>15:36 (CET)</b>	<b>POST COVID-19 CONDITIONS: CHALLENGES FOR PATIENT CARE IN LMICs</b>
	<b>Dr Tanvir Ahmed</b> , SAJIDA Foundation   Bangladesh & UK
<b>15:42 (CET)</b>	<b>ROUNDTABLE AND Q&amp;A</b>
	All speakers Moderated by <b>Dr Christine Sekaggya-Wiltshire</b> 
<b>15:58 (CET)</b>	<b>CLOSING REMARKS</b>
	<b>Prof. Richard Maude</b> , Mahidol Oxford Tropical Medicine Research Unit   Thailand

# BACKGROUND



## SPEAKER

**Prof. Juan Carlos Villar**

Fundación Cardioinfantil & Universidad Autónoma de Bucaramanga

**Colombia**

*Co-chair of the coalition's Clinical Epidemiology Working Group*

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## COALITION OUTPUTS

- Webinars/workshops
- Priority research questions
- Working group projects
- Op-eds, comments & articles
- Protocol repository

# The coalition's Clinical Epidemiology Working Group

## KEY ACHIEVEMENTS

- More than 30 working group meetings and a webinar
- List of prioritized research questions
- Protocol for a pilot study on post-COVID condition
- Publications: acceptance of a letter to the editor (Post- COVID) -The Lancet Infectious Diseases

## MEMBERS

- Chirag Bavishi | USA
- Anna Mia Ekström | Sweden
- Christopher Moore | USA
- Giordano Pérez-Gaxiola | Mexico
- Mario Tristan | Costa Rica
- Richard Ssekitoleko | Uganda
- Jean-Francois Etard | France
- Juan Carlos Villar | Colombia (Co-chair)
- Luz Angela Torres | Colombia (Coordinator)
- Agustin Ciapponi | Argentina
- Stellah Mpagama | Tanzania
- Karen Moreno | Colombia
- Paul Yonga | Kenya
- Lucas Guimarães | Brazil
- Zakir Hussain | Pakistan
- Richard Maude | UK, Bangkok (Co-chair)
- Rafael Moreira | Brazil
- Robert Colebunders | Belgium
- KM Amran Hossain | Bangladesh
- Aastha Naik | India
- Timothy Mastro | USA
- Aman Yesuf | Ethiopia

## CONTACT

Contact the working group at [WorkingGroups@covid19crc.org](mailto:WorkingGroups@covid19crc.org)

Website: [covid19.org/research-areas/clinical-epidemiology/](https://covid19.org/research-areas/clinical-epidemiology/)



## Why this webinar [1/3]

- Are LMICs preparing to care for incoming patients with post - COVID condition?
- Do we even know what post- COVID condition is?

## Why this webinar [2/3]

- Are LMICs preparing to care for incoming patients with post - COVID condition?
- Do we even know what post- COVID condition is?
- Do we know what to expect?
- Can we even guess how, when, who is to treat these patients?
- Will (should) care for such patients be different in LMICs?

## Why this webinar [3/3]

Aim: To gain

- Understanding of an unknown condition
- Awareness on implications for LMICs
  
- Definitions
- The search for treatments
- Local experiences

# A CLINICAL CASE DEFINITION OF POST-COVID-19 CONDITION BY A DELPHI CONSENSUS

Some slides were redacted at the request of the presenter.



## SPEAKER

**Prof. Joan B Soriano**

Hospital de la Princesa

Spain



# On behalf of...

Review

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## A clinical case definition of post-COVID-19 condition by a Delphi consensus

Jean B Soriano, Srinivas Murthy, John C Marshall, Pysrenko Relan, Janet V Diaz, on behalf of the WHO Clinical Case Definition Working Group on Post-COVID-19 Condition

People with COVID-19 might have sustained postinfection sequelae. Known by a variety of names, including long COVID or long-haul COVID, and listed in the ICD-10 classification as post-COVID-19 condition since September, 2020, this occurrence is variable in its expression and its impact. The absence of a globally standardised and agreed-upon definition hampers progress in characterisation of its epidemiology and the development of candidate treatments. In a WHO-led Delphi process, we engaged with an international panel of 265 patients, clinicians, researchers, and WHO staff to develop a consensus definition for this condition. 14 domains and 45 items were evaluated in two rounds of the Delphi process to create a final consensus definition for adults: post-COVID-19 condition occurs in individuals with a history of probable or confirmed SARS-CoV-2 infection, usually 3 months from the onset, with symptoms that last for at least 2 months and cannot be explained by an alternative diagnosis. Common symptoms include, but are not limited to, fatigue, shortness of breath, and cognitive dysfunction, and generally have an impact on everyday functioning. Symptoms might be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms might also fluctuate or relapse over time. A separate definition might be applicable for children. Although the consensus definition is likely to change as knowledge increases, this common framework provides a foundation for ongoing and future studies of epidemiology, risk factors, clinical characteristics, and therapy.

**Introduction**  
As of Dec 3, 2021, more than 263 million confirmed cases of COVID-19 and more than 5·2 million deaths have been reported to WHO, although estimates of 2020 greatly surpass these figures.<sup>1</sup> However, the natural history, clinical course, and long-term consequences of this new disease are still not completely understood.<sup>2</sup> Most patients with COVID-19 return to their baseline state of health after acute infection with SARS-CoV-2, but a proportion report ongoing health problems. The number of people affected with late sequelae after the acute COVID-19 episode remains unknown. Persistent symptoms are reported to be more prevalent in women, and risk of persistent symptoms is reported to be linearly related to age.<sup>3,4</sup> These effects appear to occur irrespective of the initial severity of infection, and are often linked to multiple organ systems. One study found that up to 70% of individuals at low risk of mortality from COVID-19 have impairment in one or more organs (ie, heart, lungs, kidneys, liver, pancreas, or spleen) 4 months after initial COVID-19 symptoms.<sup>5</sup> In September, 2020, and in response to requests from Member States, the WHO Classification and Terminologies unit created International Classification of Diseases 10 (ICD-10) and ICD-11 codes for post-COVID-19 condition.<sup>6</sup> Over the course of the pandemic, several definitions of post-COVID-19 condition have been proposed, including long COVID or long-haul COVID (appendix p 3). Absence of both a single terminology and a clinical case definition have been repeatedly signalled as drawbacks to advance on epidemiological reporting, research, policy making, and clinical management of affected patients. Standardisation

**Consort report Dec 2021**

Published online December 21, 2021  
[https://doi.org/10.1016/S1473-3099\(21\)00703-9](https://doi.org/10.1016/S1473-3099(21)00703-9)

Hospital Universitario de la Princesa, Servicio de Neurología, Madrid, Spain  
 J B Soriano MD, Facultad de Medicina, Universidad Autónoma de Madrid, Madrid, Spain (J B Soriano); Centro de Investigación en Red de Enfermedades Degenerativas, Instituto de Salud Carlos III, Madrid, Spain (J C Marshall MD); Division of Critical Care, Department of Pediatrics, Faculty of Medicine, University of British Columbia, Vancouver, Canada (S Murthy MD); Department of Surgery, University of Toronto, Toronto, Canada (Prof J Marshall MD); World Health Organization, Geneva, Switzerland (P Relan MD, J V Diaz MD)

Correspondence to: Prof Jean B Soriano, Hospital Universitario de la Princesa, Servicio de Neurología, Madrid 28006, Spain (jsoriano@gmail.com)

For more on the WHO classification (COVID-19) dashboard see <https://covid19.who.int/>

See Online for appendix

[www.thelancet.com/infection](https://doi.org/10.1016/S1473-3099(21)00703-9) Published online December 21, 2021

1

**WHO Clinical Case Definition Working Group on Post-COVID-19 Condition**  
*Switzerland* Maya Allan, Lisa Askie, Carine Alsokhn, Janet V Diaz, Tarun Dua, Wouter de Groot, Robert Jakob, Marta Lado, Jacobus Preller, Pryanka Relan, Nicoline Schiess, Archana Seahwag, Joan B Soriano. *UK* Nisreen A Alwan. *USA* Hannah E Davis. *Canada* John Marshall, Srinivas Murthy.

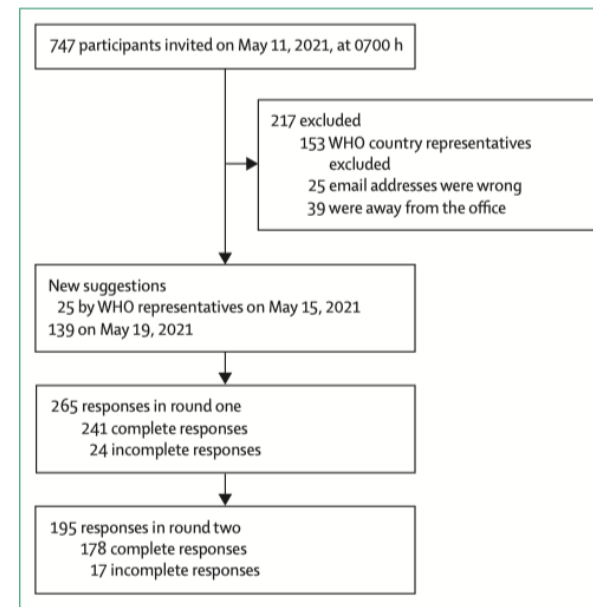


Figure 1: STROBE flowchart of participation in the two Delphi rounds

WHO CCD WG. Lancet Infect Dis 2020.

# The beginning...

**IN DEPTH**

**INFECTION DISEASES**

## New SARS-like virus in China triggers alarm

Pneumonia outbreak in Wuhan appears to subside, but the virus could re-emerge

By Jon Cohen and Dennis Normile

**H**ad the nightmare returned? That's the question many were asking in the first 10 days of this year, after a new form of pneumonia emerged in Wuhan, a megacity in central China. The outbreak revived memories of severe acute respiratory syndrome (SARS), the disease that emerged in China in 2002 and sickened 8098 people in 37 countries before it was quashed in the summer of 2003. Like SARS, the Wuhan pneumonia cases were linked to a market selling myriad species of live animals, and they appear to be caused by a new member of the coronavirus family closely related to the SARS virus. And once again, China appeared to be less than forthcoming with information.

Today, global health experts are breathing a little easier. As *Science* went to press, only one of 42 people known to be infected had died: a 61-year-old man already suffering from abdominal tumors and chronic liver disease. (SARS had a 9.6% mortality rate.) No evidence suggests the virus easily passes between humans, which can turn a local problem into a global crisis. And Chinese researchers have now shared the sequence of six genomes of the as-yet-unnamed virus with the world, which scientists elsewhere have used to quickly develop and publish a diagnostic test.

Ralph Baric, a coronavirus researcher at the University of North Carolina, Chapel Hill, is already trying to synthesize live virus from the data so that he can study it in animals.

Still, many questions remain. Researchers have not identified the animal species at the marketplace that harbored the virus. When it emerged and the true number of people infected remain a mystery. Meanwhile, a case in Thailand, reported on 13 January—in a tourist who flew from Wuhan to Bangkok—led World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus to consult experts on outbreak responses. The patient had not visited the Wuhan market at the center of the outbreak but had been to other animal markets, suggesting the virus has spread within Wuhan, the *South China Morning Post* reported on 14 January.

The first known patient developed symptoms—which can include difficulty breathing and fever—on 8 December 2019. Officials closed the seafood market on New Year's Day, and no new patients have been identified in Wuhan since 3 January. The virus was not found in 763 close contacts of those infected, or in health care workers, who often fall ill during outbreaks of viruses that can transmit between humans.

"It is a limited outbreak," says Xu Jianguo, who runs an infectious disease laboratory at the Chinese Center for Disease Control and Prevention and heads an evaluation committee that's advising the Chinese government. "If no new patients appear in the next week, it might be over."

WHO said in a 12 January statement that it was "reassured of the quality of the ongoing investigations and the response measures implemented in Wuhan, and the commitment to share information regularly."

But others criticized the way early information came out. News that researchers had discovered a novel coronavirus came in an 8 January story in *The Wall Street Journal*; Xu confirmed the finding on a state-run TV station several hours later. "It's not a good situation when *The Wall Street Journal* [reports] a SARS-like coronavirus before the Chinese government announces it," Baric says. On 10 January, Jeremy Farrar, an infectious disease specialist who heads the London-based Wellcome Trust, tweeted his worry about rumors that the Chinese government did not share "critical public health information" because Chinese researchers wanted to ensure publication of their findings in high-profile journals first. Less than 12 hours later, however, evolutionary biologist Edward Holmes of the University of Sydney published an "initial"

PHOTO: WANG GUOYANG/GETTY IMAGES

234 17 JANUARY 2020 • VOL. 347 ISSUE 4475

Published by AAAS

sciencemag.org SCIENCE

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**"It is a limited outbreak,"** says Xu Jianguo, **"If no new patients appear in the next week, it might be over."**

Cohen J, Normile D. *Science* 2020.  
(17 January 2020)

# COVID-19 related publications in PubMed (and counting)

NIH National Library of Medicine  
National Center for Biotechnology Information

PubMed.gov

covid-19 Search

Advanced Create alert Create RSS User Guide

Save Email Send to Sorted by: Most recent Display options

MY NCBI FILTERS 223,652 results Page 1 of 1,119

RESULTS BY YEAR

Use COVID-19 filters from PubMed Clinical Queries to refine your search  
Treatment Mechanism Transmission More filters  
See more SARS-CoV-2 literature, sequence, and clinical content from NCBI

1981 2022

TEXT AVAILABILITY  
 Abstract

[Persistent complete atrioventricular block in a young patient with COVID-19].  
1 Juárez-Lllochla JP, Norabuena-Rossel LM, Jaime-Chinguel D.  
Cite Arch Cardiol Mex. 2022 Feb 1. doi: 10.24875/ACM.21000241. Online ahead of print.  
PMID: 35104930 Spanish. No abstract available.

## DOING THE MATHS...

223,652 papers  
published in 763 days...

You would need to read  
293 papers per day  
(or one every five  
minutes...). 🧐

PubMed (2 February 2022)

# There are already (at least) 700 papers on Long COVID (or related terms)!

**Correspondence**

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**Long COVID: tackling a multifaceted condition requires a multi-disciplinary approach**

In their Comment,<sup>1</sup> Dana Yelin and colleagues highlight the persistent, heterogeneous, and recurring symptoms of long COVID. A *Lancet Editorial* asks for better research and care to avoid years of struggle for individuals with long COVID. We write following an international, multi-stakeholder forum, in which peoples' voices were central, to expand the call to action and to identify how we can prevent long COVID from becoming the long-lasting legacy of COVID-19.

On Dec 9-10, 2020, the International Severe Acute Respiratory and Emerging Infection Consortium (ISARIC), the Global Research Collaboration for Infectious Disease Preparedness (GloPID-R) research funders group, and Long COVID Support, a global patient group, held the Long COVID Forum (appendix pp 3-2). We brought together people living with long COVID, interdisciplinary researchers, funders, public health experts, and policy makers, including WHO, in a global public forum to identify research gaps to inform urgent long COVID research and support priorities.

Our discussions, introduced by WHO Director-General Tedros Adhanom Ghebreyesus, were built around three people-centred themes, identified by long COVID support groups: recognition, research, and rehabilitation. We heard from people living with long COVID from around the world, who asked: what is causing my illness? What can I do to recover? Why do I have long COVID when others recover quickly? How do I convince my doctor that what I am suffering from is real? How can others be prevented from getting long COVID? We explored existing evidence,<sup>1</sup> including the recently funded research portfolio on long COVID that will contribute to the evidence body in the short to mid-term<sup>2</sup> and updates from ongoing research from around the world. A complex, multifaceted condition involving a range of physical, cognitive, and psychological symptoms was described, affecting adults and children in different settings, with occupational, economic, and social implications. Such complexity requires a multi-disciplinary, globally coordinated approach that supports harmonised, large-scale studies that have the power to provide robust evidence to inform policy and patient-centred care and support to improve long COVID outcomes.

The structure of the forum facilitated the identification of research gaps (appendix p 3). The core message was the need to expand research beyond hospitalised patients to include those who experienced COVID-19 in the community, children, vulnerable communities, and resource-constrained populations to improve equity in access to research and reduce health inequalities.

OH is living with long COVID and is a founder of the Long COVID Support Group. JS reports experiencing persisting symptoms of COVID-19, following suspected COVID-19 in March, 2020. All other authors declare no competing interests.

**Alice Norton, <sup>1</sup>Piero Olliaro, Louise Sigfrid, Gail Carson, Claire Hastie, Charu Kautzsch, Genevieve Baiy-Lanouche, Jake C Suetz, Margaret O'Hara, on behalf of the ISARIC and GloPID-R Long COVID Forum Working Group?**  
[piero.olliaro@ndm.ox.ac.uk](mailto:piero.olliaro@ndm.ox.ac.uk)

UK Collaborative on Development Research, London, UK (AM); ISARIC Global Support Centre, Centre for Tropical Medicine and Global Health, Nuffield Department of Medicine, University of Oxford, Oxford OX3 7FZ, UK (PO, LS, GC); Long Covid Support, UK (CH, MKT); McMaster Immunology Research Centre and Department of Medicine, McMaster University, Hamilton, ON, Canada (CK); Institute of Infection and Immunity Canadian Institutes of Health Research, Government of Canada, Ottawa, ON, Canada (GB, L); Queen Elizabeth Hospital, King's Lynn, UK (JS)

<sup>1</sup>Group members are listed in the appendix (p 3)

1 Yelin D, Wertheim E, Vester P, et al. Long-term consequences of COVID-19: research needs. *Lancet Infect Dis* 2020; 20: 1115-17.

2 The Lancet. Facing up to long COVID. *Lancet* 2020; 396: 1862.

3 Michelen M, Manoharan L, Elsheir N, et al. Characterising long-term COVID-19: a rapid living systematic review. *medRxiv* 2020; published online Dec 9. <https://doi.org/10.1101/2020.12.08.20246025> (preprint).

4 UKCRH, GloPID-R. COVID-19 research project tracker by UKCRH & GloPID-R. <https://www.ukcrh.org.uk/funding-landscape/covid-19-research-project-tracker/> (accessed Jan 15, 2021).

See Online for appendix

Norton A, et al. *Lancet Infect Dis* 2021.

**THE ROYAL SOCIETY**

23 OCTOBER 2020

**Long Covid: what is it, and what is needed?**

This paper is provided to SAGE and UKRI to raise awareness of the emerging syndrome that has become known as Long Covid, among both the public, the medical profession and politicians, and to promote investigation of the predisposing factors, the clinical features and the pathogenesis of the condition, in order to lead to better diagnosis and clinical management. The Royal Society identifies questions that need urgent attention in clinical and laboratory research.

This paper is a pre-print and has not been subject to formal peer-review.

**A) Background and rationale**

- It is now clear that, while most people infected with SARS-CoV-2 either remain asymptomatic or recover quickly and completely, a proportion of infected people develop persistent symptoms, which can be severely disabling<sup>1-3</sup>. For brevity, this phenomenon will be called Long Covid here; see B.3 below.
- The remarkably wide range of persistent or recurrent symptoms reported by individuals following SARS-CoV-2 infection includes the following:
  - severe fatigue
  - reduced exercise capacity
  - breathlessness
  - chest pain or heaviness
  - fever
  - palpitations
  - cognitive impairment – “brain fog”
  - anosmia or ageusia
  - vertigo and tinnitus
  - headache
  - peripheral neuropathy
  - metallic or bitter taste
  - skin rash
  - joint pain or swelling

The syndrome is often accompanied by anxiety and depression, associated with the protracted and unpredictable course of the symptoms<sup>4</sup>.

The precise fraction that fall in this group is poorly understood at present, as are the factors that predispose to this prolonged ill health after initial apparent recovery from the infection. The duration and the long-term sequelae of Long Covid are also unknown, the pathogenesis is not understood, and satisfactory treatment is lacking. These difficulties are compounded by a lack of awareness of the syndrome, especially among the public. A wider appreciation of the incidence and nature of the syndrome is likely to influence behaviour, in particular compliance with measures to minimize transmission of the virus. It is becoming apparent that Long Covid may impose a significant health burden worldwide.



Editorial. The Royal Society 2020.

HEALTH SYSTEMS AND POLICY ANALYSIS

POLICY BRIEF 39

**In the wake of the pandemic**  
**Preparing for Long COVID**

**Selina Rajan**  
**Kamlesh Khunti**  
**Nisreen Alwan**  
**Claire Steves**  
**Trish Greenhalgh**  
**Nathalie MacDermott**  
**Anna Sagan**  
**Martin McKee**

 World Health Organization  
 European Observatory  
 on Health Systems and Policies  
AN INTERNATIONAL NETWORK OF EXPERTS

Policy Brief, EURO WHO Office 2021



[Perspective](#) > [Medscape](#) > [Impact Factor with F. Perry Wilson](#)

COMMENTARY

## Is Long COVID Even Real?

F. Perry Wilson, MD, MSCE

[DISCLOSURES](#) | November 09, 2021

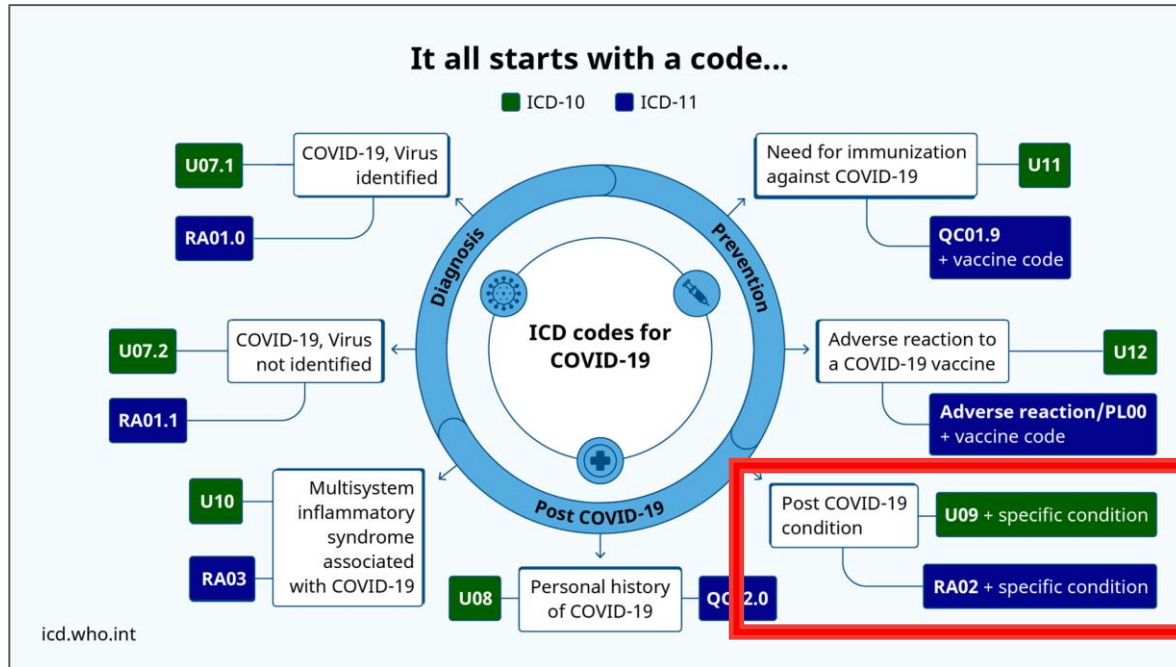
JAMA Internal Medicine | [Original Investigation](#)

## Association of Self-reported COVID-19 Infection and SARS-CoV-2 Serology Test Results With Persistent Physical Symptoms Among French Adults During the COVID-19 Pandemic

Joane Matta, PhD; Emmanuel Wiernik, PhD; Olivier Robineau, MD, PhD; Fabrice Carrat, MD, PhD; Mathilde Touvier, PhD; Gianluca Severi, PhD; Xavier de Lamballerie, MD, PhD; H el ene Blanch e, PhD; Jean-Fran ois Deleuze, PhD; Cl ement Gouraud, MD, MSc; Nicolas Hoertel, MD, PhD; Brigitte Ranque, MD, PhD; Marcel Goldberg, MD, PhD; Marie Zins, MD, PhD; C edric Lemogne, MD, PhD; for the Sant e, Pratiques, Relations et In egalit es Sociales en Population G en erale Pendant la Crise COVID-19-S erologie (SAPRIS-SERO) Study Group

[Matta J, et al. JAMA Intl Med 2021.](#)

# A CLINICAL CASE DEFINITION OF POST-COVID-19 CONDITION BY A DELPHI CONSENSUS



## **U08** Personal history of COVID-19

### **U08.9** Personal history of COVID-19, unspecified

*Note:* This optional code is used to record an earlier episode of COVID-19, confirmed or probable that influences the person's health status, and the person no longer suffers of COVID-19. This code should not be used for primary mortality tabulation.

## **U09** Post COVID-19 condition

### **U09.9** Post COVID-19 condition, unspecified

*Note:* This optional code serves to allow the establishment of a link with COVID-19. This code is not to be used in cases that still are presenting COVID-19.

## **U10** Multisystem inflammatory syndrome associated with COVID-19

### **U10.9** Multisystem inflammatory syndrome associated with COVID-19, unspecified

Cytokine storm  
Kawasaki-like syndrome  
Paediatric Inflammatory Multisystem Syndrome (PIMS)  
Multisystem Inflammatory Syndrome in Children (MIS-C)

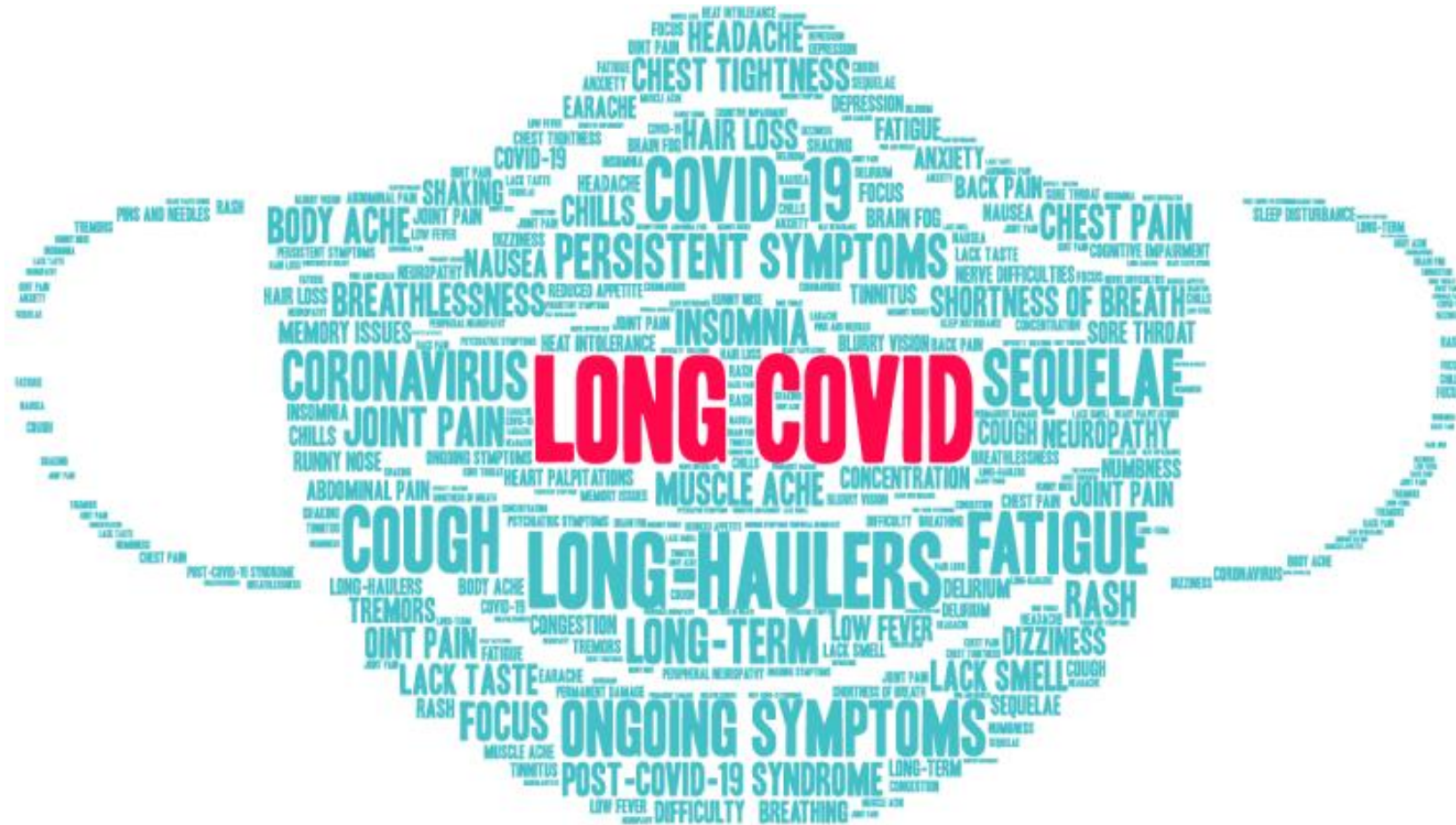
Temporally associated with COVID-19

*Excludes:* Mucocutaneous lymph node syndrome [Kawasaki] (M30.3)

<https://www.who.int/standards/classifications/classification-of-diseases/emergency-use-icd-codes-for-covid-19-disease-outbreak>  
[Available since February 2020]



# A CLINICAL CASE DEFINITION OF POST-COVID-19 CONDITION BY A DELPHI CONSENSUS



## Definitions

Asthma: “Asthma is like love: everyone knows what it is but no one can agree on its definition.”


AIDS

Fibromyalgia

Post-ICU syndrome

# Delphi Manager WHO Defining Post COVID-19 condition study

<https://delphimanager.liv.ac.uk/DefiningPostCOVID/>



**Register**

Name

E-Mail address  To enable us to provide you with a copy of

Confirm Email

Stakeholder Group

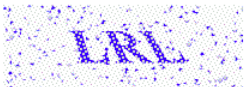
What is your country of residence?

What is your gender?

What is your age band?

I agree to participate in, and receive email notifications regarding this study

Please prove you are not a robot



Change Captcha Code  
enter the 3 letter Captcha code shown

Administration - Study Dashboard

This page show you (Joan B Soriano) an overview of the study

DefiningPostCOVID

*User Data*

ACTIVE USERS	COMPLETED R1 (NOT COMPLETED)
0	0 (0)

*Stakeholder data breakdown*

STAKEHOLDER GROUP	COMPLETED R1 (NOT COMPLETED)
1. PATIENTS	0 (0)
2. EXTERNAL EXPERTS	0 (0)
3. WHO	0 (0)
4. OTHER	0 (0)

*Additional Outcomes*

ROUND 1 (ADDED TO STUDY)
0 (0)

*Reasons for Change*

ROUND 2
NONE GIVEN

*Rounds*

ROUND	START DATE	CLOSE DATE	EDIT
ROUND 1	11-Apr-2021	17-Apr-2021	[Edit]
ROUND 2	18-Apr-2021	25-Apr-2021	[Edit]

## Statistical rule as per the Research Protocol

**‘Consensus’** will be obtained on a question if **70% or more** of the responses fall within the same response on a 9-point Likert scale.

**‘Disagreement’** will occur if **35% or more of responses fall in both of the two extreme ranges** of possible options on the Likert scale.

All other combinations of panel answers will be considered **‘partial agreement’**.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Not my expertise
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# A CLINICAL CASE DEFINITION OF POST-COVID-19 CONDITION BY A DELPHI CONSENSUS



History or probable history of SARS-CoV-2 infection



Symptoms present 3 months after infection



Symptoms persist for more than 2 months



Cannot be explained by an alternative diagnosis

Abdominal pain	Menstrual and period problems	Altered smell/taste	Anxiety	Blurred vision	Chest pain
Brain fog	Cough	Depression	Dizziness	Fatigue	Intermittent fever
GI issues	Memory issues	Joint pain	Muscle pain/spasms	Neuralgias	New-onset allergies
Pins-and-needles sensations	Post-exertional malaise	Shortness of breath	Sleep disorders	Tachycardia/palpitations	Tinnitus and other hearing issues

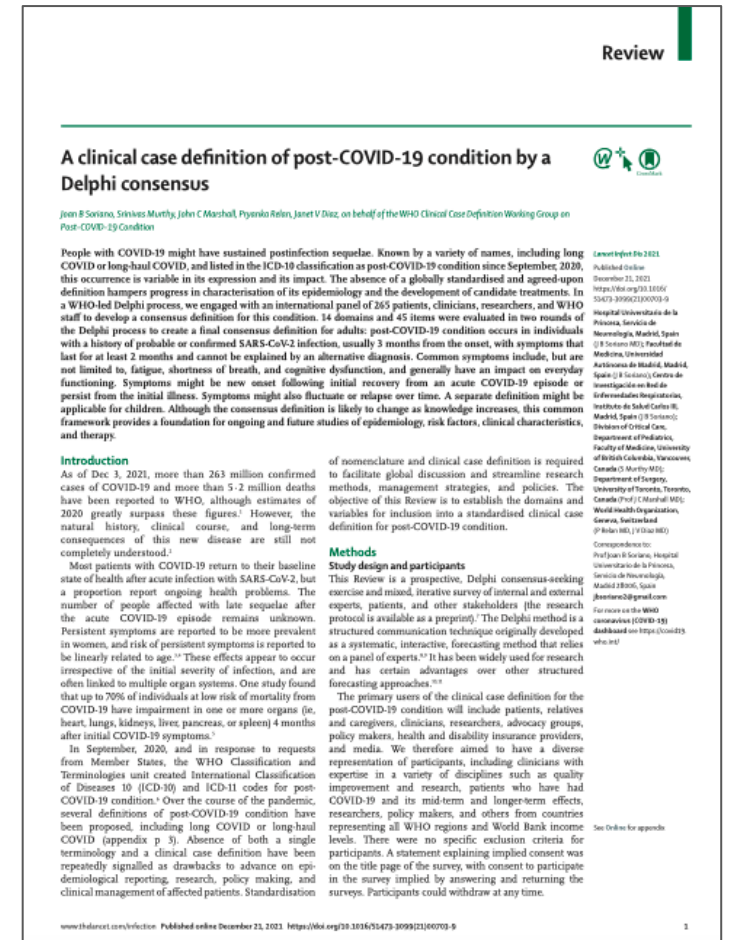


# WHO Delphi clinical case definition of post COVID-19 condition

“Post COVID-19 condition is defined as the condition occurring in individuals with a history of SARS-CoV-2 infection, with either laboratory confirmation or not, occurring three months from the onset of COVID-19 with symptoms lasting for at least two months. The symptoms of post COVID-19 condition (such as fatigue, shortness of breath, cognitive dysfunction, ...), are persistent in nature and of new onset, whatever the number, intensity, or severity, but likely appearing in clusters. They have an impact on everyday functioning, and cannot be explained by an alternative diagnosis. A separate definition should be explored for children.”

A separate definition might be applicable for children.

Word count: 96 words, 8 lines size 12 in WORD

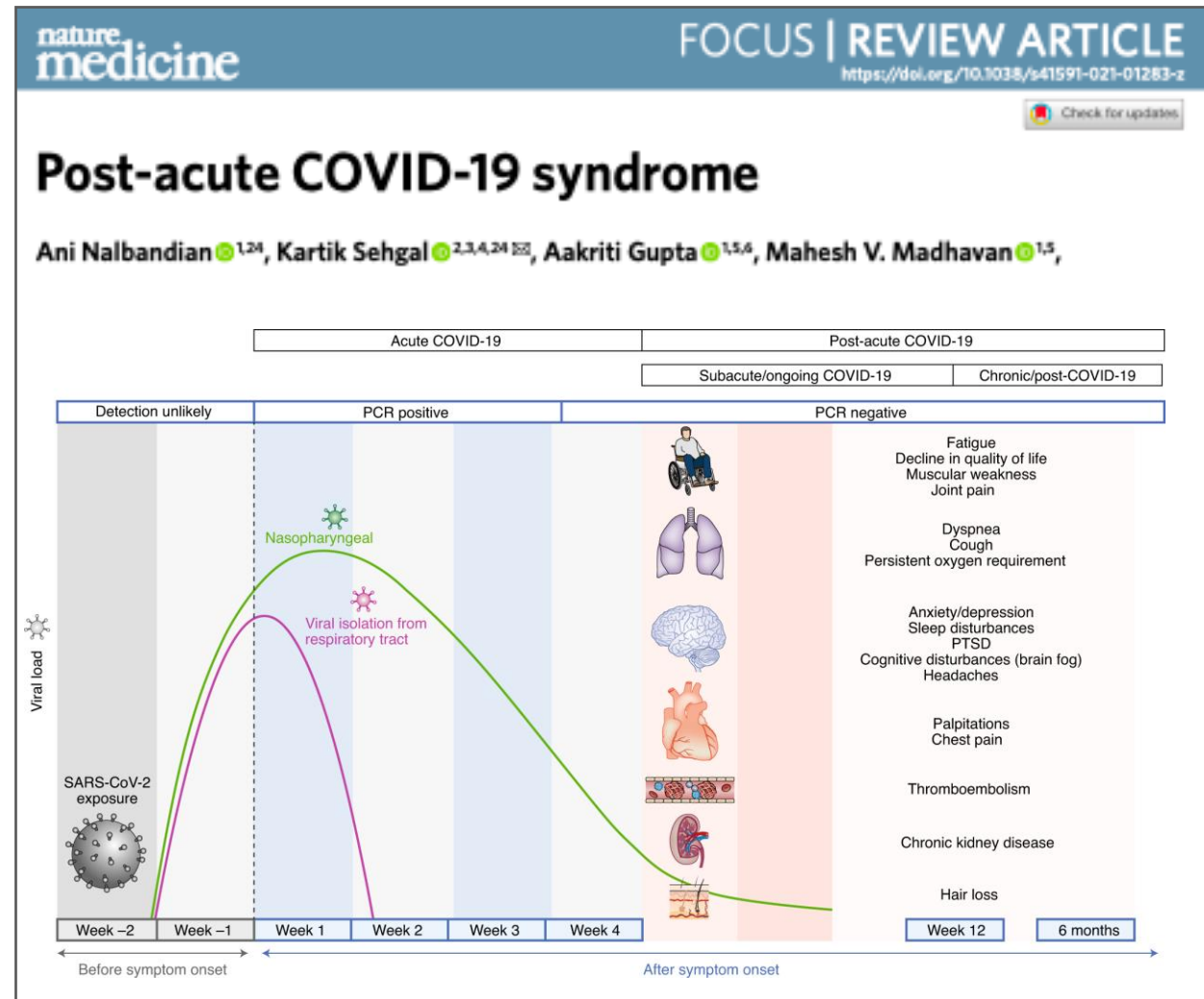


News in focus

# NIH WILL INVEST \$1 BILLION TO STUDY 'LONG COVID'

US health agency will fund researchers to track people's recovery.

News in focus - 4 March 2021



Nature Medicine | Vol 586 | 22 March 2021

# Long COVID in LMICs

European Journal of Epidemiology (2020) 35:743–748  
<https://doi.org/10.1007/s10654-020-00660-1>

COVID-19



## Long-term strategies to control COVID-19 in low and middle-income countries: an options overview of community-based, non-pharmacological interventions

Rajiv Chowdhury<sup>1</sup> · Shammi Luhar<sup>1</sup> · Nusrat Khan<sup>1</sup> · Sohel Reza Choudhury<sup>2</sup> · Imran Matin<sup>3</sup> · Oscar H. Franco<sup>4</sup>

Received: 14 June 2020 / Accepted: 1 July 2020 / Published online: 13 July 2020  
 © The Author(s) 2020

PATHOGENS AND GLOBAL HEALTH  
 2021, VOL. 115, NO. 6, 337–338  
<https://doi.org/10.1080/20477724.2021.1953687>



COMMENTARY

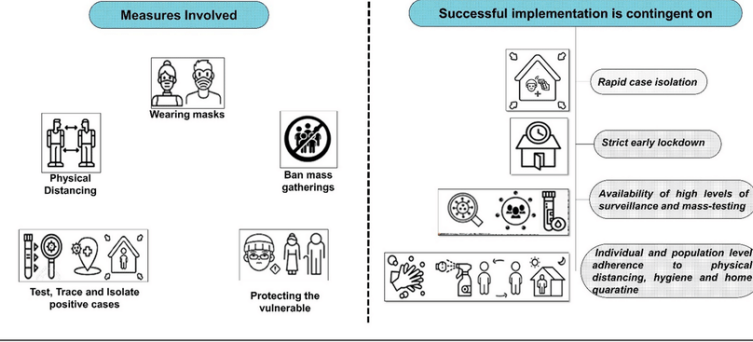
## Rethinking development agenda on post-COVID era: a case study on Bangladesh

Samin Huq<sup>a</sup> and Raaj Kishore Biswas<sup>b</sup>

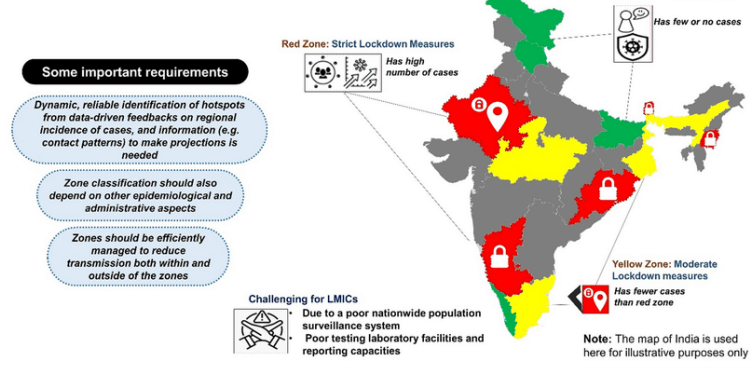
<sup>a</sup>RESPIRE project, Child Health Research Foundation, Dhaka, Bangladesh; <sup>b</sup>Transport and Road Safety (TARS) Research Centre, School of Aviation, University of New South Wales, Sydney, Australia

**KEYWORDS** Sustainable development goal; SARS-COVID-2; coronavirus; development; Bangladesh; IMIC

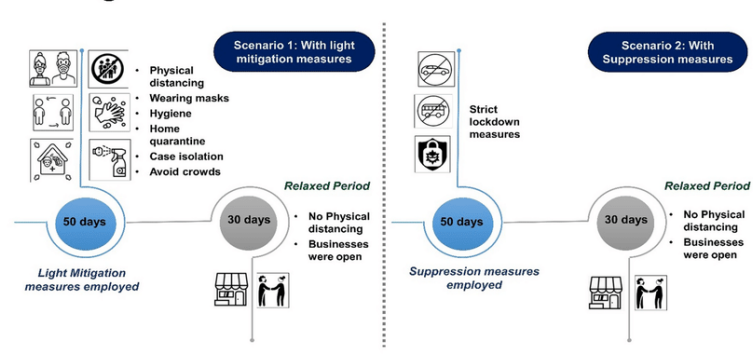
### Sustained Mitigation



### Zonal Lockdown



### Rolling Lockdown



## Conclusions

- A definition (and name) is a first step in the right direction to establish a dialogue among specialists and specialties
- Urgent need to quantify thresholds and timings for post-COVID-19 condition/Long COVID
- Management and recommendations have to be adapted in LMIC settings



# POST-COVID 19 CONDITION IN ARGENTINA



## SPEAKER

**Dr Agustín Ciapponi**

Institute for Clinical Effectiveness and Health Policy (IECS)

**Argentina**

*Member of the coalition's Clinical Epidemiology Working Group*

# Post-COVID-19 condition - Argentina

---

Prof. Dr AGUSTÍN CIAPPONI MD MSc PhD

Cochrane Argentina Director

Institute for Clinical Effectiveness and Health Policy (IECS)

Principal Investigator of CONICET



**IECS**  
INSTITUTO DE EFECTIVIDAD  
CLINICA Y SANITARIA

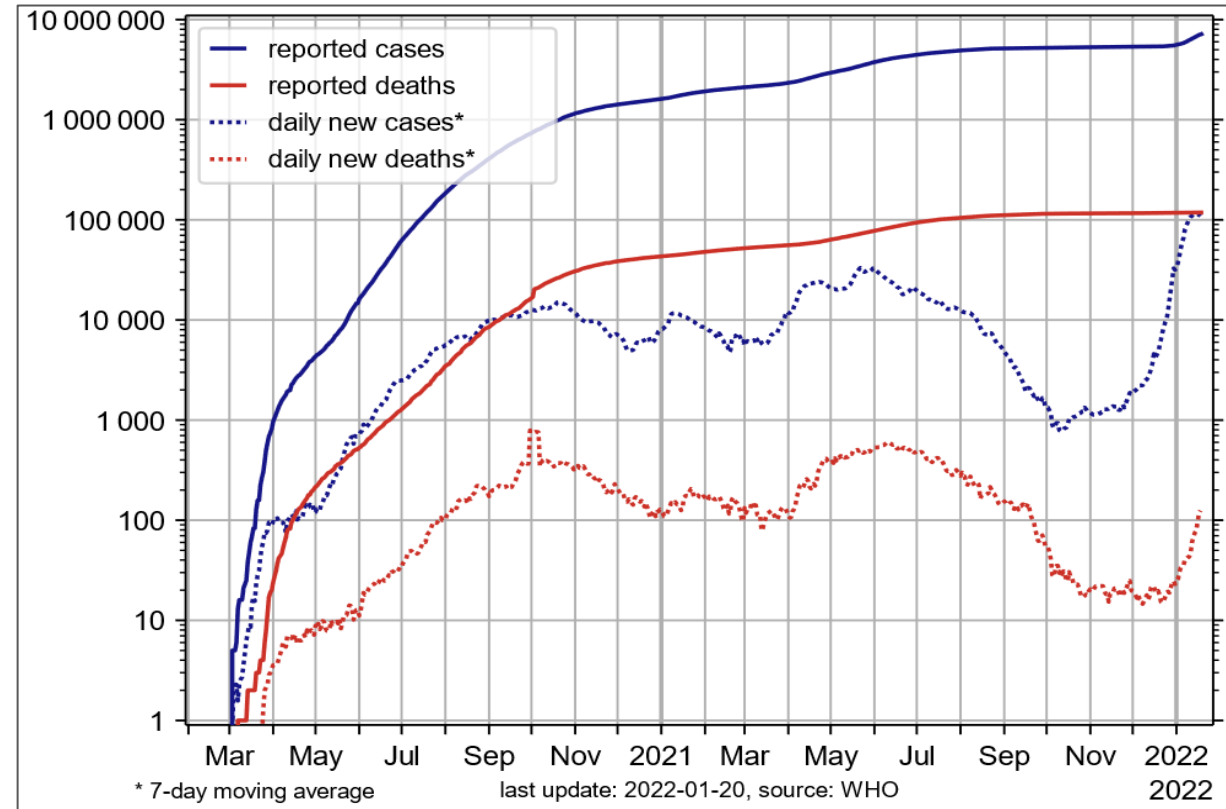
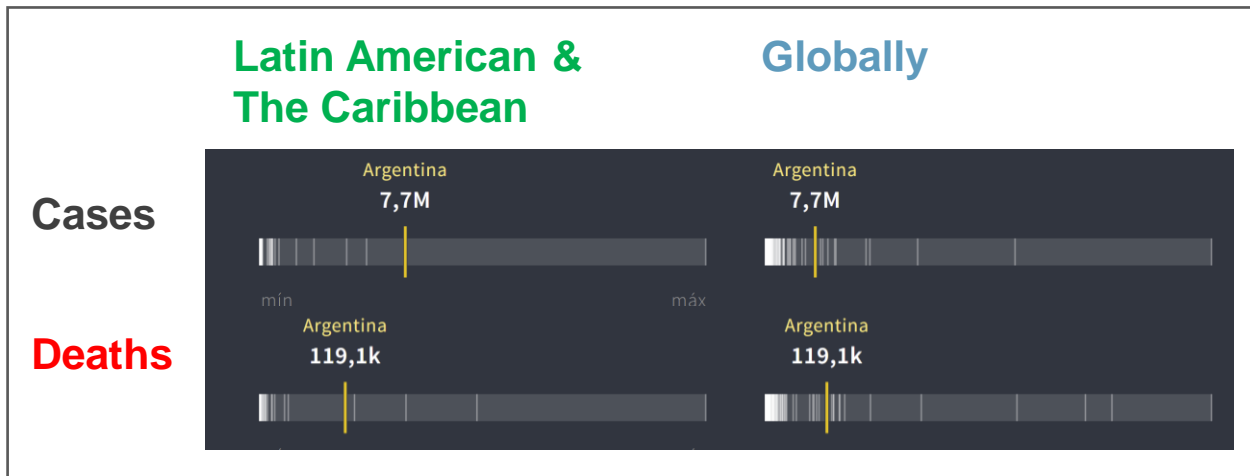
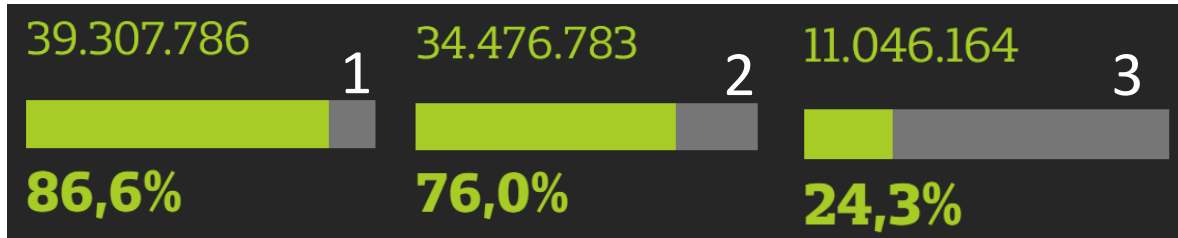


**Cochrane**  
**Argentina**

**I declare no conflict of interest.**

# COVID-19 pandemic and vaccination status in Argentina

**Vaccination:**  
# doses



# Management of Long COVID in Argentina

- The Argentine Ministry of Health developed recommendations for the therapeutic approach to COVID-19 but only provided specific recommendations for long COVID-19 for the pediatric population.
- The Argentine Society of Medicine Practical recommendation for adult patient care with long COVID-19, and a consensus of Argentine Respiratory Medicine societies provided recommendation on pneumonological monitoring of long COVID-19.
- A few hospital services have independently organized post-COVID-19 clinics but most patients with persistent symptoms are managed by primary care providers.



# Research of Long COVID in Argentina

**Covid prolongado: estudio de corte transversal**

*Long covid: cross sectional study*

*Manuel Antonio Prieto<sup>1</sup>, Omar Prieto<sup>2</sup>, Horacio Matías Castro<sup>3</sup>*

**Revista de la Facultad de Ciencias Médicas  
de Córdoba 2021; 78(1): 33-36**

Cross-sectional study (85 patients with a confirmed COVID-19, who attended on an outpatient basis after the acute phase (> 3 weeks) of the disease. Most (86%) had a mild disease, 45% were women and the mean age was  $43 \pm 13$  years old.

- After the acute phase of COVID-19, 52% (95%CI 41 to 63%) of the patients persisted with symptoms, like fatigue (49%) and cough (33%), insomnia (19%) and anxiety (16%).
- Female sex, obesity, age between 35-55 years, and initial hospitalization were associated with the persistence of symptoms.
- The symptoms usually resolved over time.

---

An ongoing multicenter and descriptive study (supported by a Ministry of Health grant) in centers Buenos Aires city and the province of Buenos Aires will determine the mortality, clinical sequelae and quality of life in patients discharged from Intensive Care Units with diagnoses of COVID-19.

These patients could present worsening of physical, psychological/cognitive deficits, impact on their QoL, rehospitalizations and death.

# Thanks

**IECS**  
INSTITUTO DE EFECTIVIDAD  
CLINICA Y SANITARIA

Centro Colaborador de la OMS/OPS en  
Evaluación de Tecnologías de la Salud

**Cochrane**  
Argentina

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# POTENTIAL OF REPURPOSED DRUGS AS TREATMENTS FOR LONG COVID



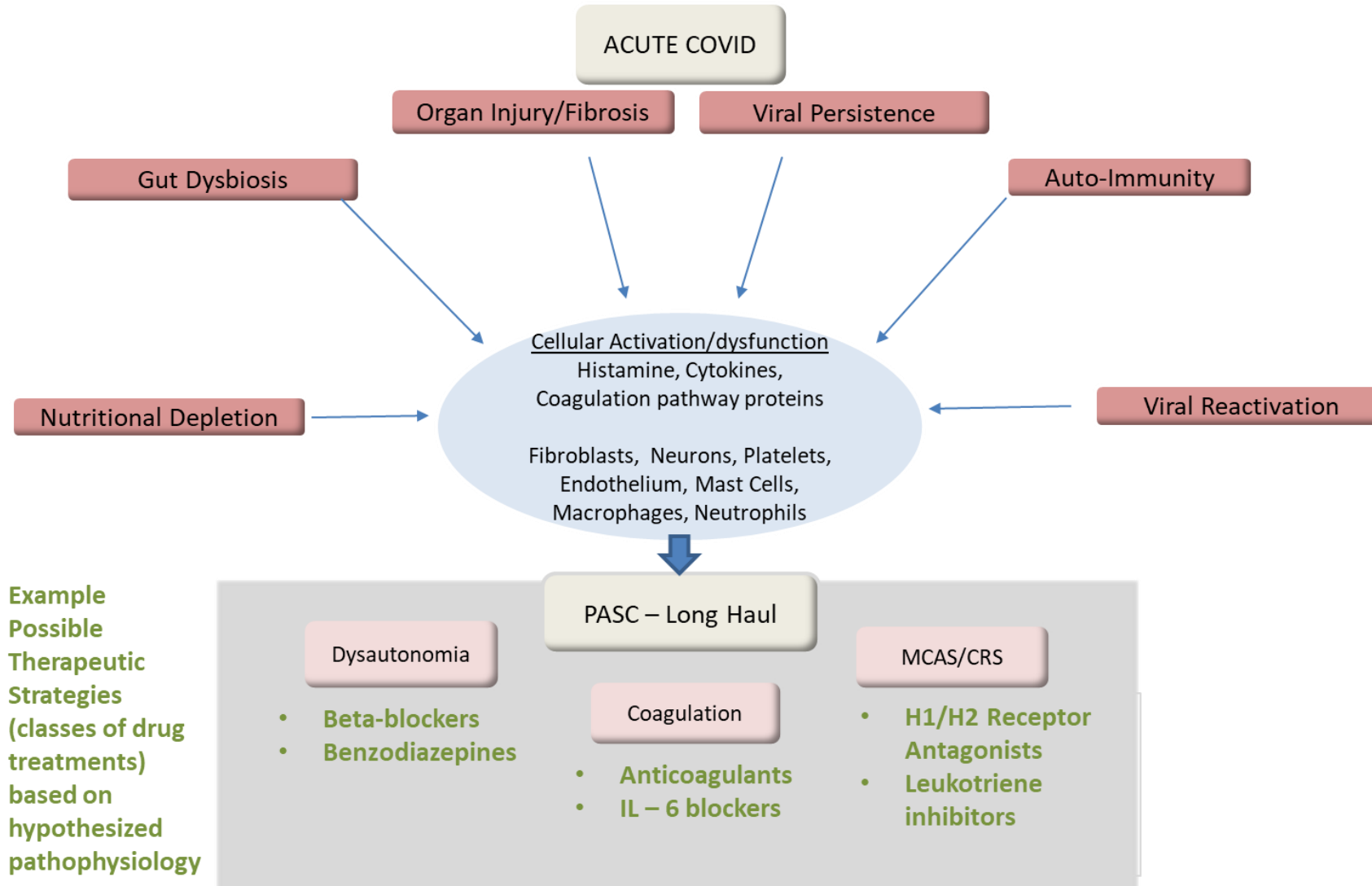
## SPEAKER

**Ms Heather Stone**

United States Food and Drug Administration

USA

# PASC Pathophysiology – Treatment Strategies



Slide adapted from work by Dr. Vikas and Vidula Sukhatme, Emory University School of Medicine;

Published Sources:

Nalbandian, A., Sehgal, K., Gupta, A. *et al.* Post-acute COVID-19 syndrome. *Nat Med* **27**, 601–615 (2021). <https://doi.org/10.1038/s41591-021-01283-z>

Yong SJ. Long COVID or post-COVID-19 syndrome: putative pathophysiology, risk factors, and treatments. *Infect Dis (Lond)*. 2021 Oct;53(10):737-754. doi: 10.1080/23744235.2021.1924397. Epub 2021 May 22. PMID: 34024217; PMCID: PMC8146298.

## Why focus on Repurposed Drugs for Long COVID, including in LMICs?

- Given the limitations on access to medicines, availability in many countries, and high cost, it will be important to specifically focus on the potential for repurposed drugs to serve as treatments for Long COVID, and not solely emphasize development of new molecular entities
- Particular attention should be paid to drugs that are:
  - Off-patent/generic
  - Low cost
  - Readily available in most countries
  - Well-established safety profile and relatively low-risk
  - Do not have major drug-drug interactions with other commonly used medications
  - Have easy administration (strong preference for oral route and twice a day or less frequency of administration)

# POST COVID-19 CONDITIONS: CHALLENGES FOR PATIENT CARE IN LOW- AND MIDDLE-INCOME COUNTRIES (LMICs)



## **SPEAKER**

**Dr Tanvir Ahmed**  
SAJIDA Foundation  
Bangladesh & UK

## Overview of the post-COVID-19 condition in LMICs

- Not much is known about the patterns and clusters of symptoms of long-term impact of COVID-19 in Bangladesh
- A recent study in Bangladesh reported that 87% of survivors of COVID-19 have at least one persistence symptom, particularly fatigue and dyspnoea (Anwar, Nasrullah, & Hosen, 2020)
- **Our observation suggest:**
  - A considerable proportion reports symptoms related to physical systems
  - Survivors and their family members may have considerable burden of mental health related issues
  - Associated contextual changes may also have contributed to manifestation of post-COVID conditions
  - Both public and private setups have considerable stake in rendering post-COVID-19 services in Bangladesh (and by extension the LMICs)

## Most relevant ongoing or completed studies

- Two known studies investigating the prevalence of long-term consequences of COVID-19 in Bangladesh:
  - Based on biochemical and clinical evidence
  - Lack in perspectives of the participants and their context
- To understand post COVID challenges in Bangladesh (and in LMICs) SAJIDA Foundation is conducting several studies on:
  - Context of COVID-19 in terms of experience of the family members of people with symptoms of COVID-19, experience of frontline health workers (FSWs) and organisational experience of rendering COVID related services
  - Evidence of physical and mental signs and symptoms of post COVID complications and related biochemical and radiological signs
  - How post COVID complications and corresponding socioeconomic status and related changes are associated?



## Studies conducted by SAJIDA Foundation, Bangladesh

<i>Study</i>	<i>Status</i>
Study 1: Experiences of frontline health workers in Bangladesh during COVID-19 pandemic	Completed Manuscript submitted
Study 2: Adapting to COVID-19 by the community in Bangladesh	Completed Manuscript submitted
Study 3: Case study of SAJIDA Foundation in rendering both health and non-health services amidst COVID-19 pandemic in Bangladesh	Completed, Manuscript is being prepared
Study 4: To investigate physical and mental health burdens among people who were admitted in a hospital with COVID like symptoms and its relation to socio-economic factors (and related changes)	Completed Analysis in progress
Study 5: To investigate the clinical, biochemical and radiological basis of reported post-COVID conditions among participants of study 4	Submitted for ethical review

## SAJIDA Foundation studies: Initial Findings (Context)

### Study 1 and 2

- **Community and family:** Logistical and social challenge in maintaining social distance, boosted family relationship, improved hygiene practice, emotional and financial toll on families
- **Front line health workers (FSWs):** Access to COVID related info, disruption of personal and family life and Assistance from the organization in terms of safe working environment, support towards FHWs family members etc.

# SAJIDA Foundation studies: Initial Findings (Physical and Mental Health) [1/3]\*

Study 4 (N=481)

- **20%** suffered from shortness of breath after discharge;
  - **76%** never had breathing problems before catching COVID-19
  - **57%** had recurrence of shortness of breath recurred within a month
  - **66%** continued to experience it
  - **47%** have also experienced dry cough (Most reported having dry cough within the first three months)
- **43%** faced difficulties in performing daily activities
  - **67.79%** still face these difficulties

\*unpublished/work in progress

## SAJIDA Foundation studies: Initial Findings (Physical and Mental Health) [2/3]\*

Study 4 (N=481)

- **6%** participants were entirely unable to perform their daily activities
  - **77%** were aged 31 to 59 years
- **38%** participants experienced palpitations
  - **76%** did not suffer from palpitation before COVID-19
  - **67%** continued to experience palpitations
- **4%** reported having heart problem
  - **84%** had these problems before
  - **47%** experienced heart issues after a month of hospital release
- **10.4%** suffered from swollen ankle, developed after a month of hospital release

\*unpublished/work in progress

# SAJIDA Foundation studies: Initial Findings (Physical and Mental Health) [3/3]\*

Severity labels based on DASS-21 scores	Depression	Anxiety	Stress
Mild	11%	6%	6%
Moderate	9%	12%	9%
Severe	6%	5%	6%
Extremely severe	4%	3%	3%

\*unpublished/work in progress

# Preparedness and challenges of LMICs to attend patients with post-COVID-19 condition [1/2]

- **Clinical challenges:** Effective and contextualised algorithm to manage, training to the healthcare providers at various level, institutional preparation to be able to welcome patients with such conditions etc.
- **System related challenges:** Additional resources, collaboration between policy makers and providers, ensure safe (providers) workplace and sensitive services, a comprehensive system for early detection, management, referral and follow up various tiers of the health system etc.

## Preparedness and challenges of LMICs to attend patients with post-COVID-19 condition [2/2]

- **Community:** Community engagement and response plan, supportive environments for such conditions at home, early care seeking etc.
- **Research:** Understanding the magnitude of the problem, adopting lifestyle changes leading to containment of other diseases (give diarrhea) and addressing the harmful ones, appropriate information hub to sensitize community, providers and policy makers, understanding the impact of non health issues and ways to address those etc.

# Thank you



# DISCUSSION AND Q&A



# CLOSING REMARKS



## SPEAKER

**Prof. Richard Maude**

Mahidol Oxford Tropical Medicine Research Unit (MORU)

**Thailand**

*Co-chair of the coalition's Clinical Epidemiology Working Group*

# How to connect



Become a **COVID-19 Clinical Research Coalition** member:



[bit.ly/3AyL42D](https://bit.ly/3AyL42D)

[www.covid19crc.org](https://www.covid19crc.org)

[info@covid19crc.org](mailto:info@covid19crc.org)

[#covid19crc](https://twitter.com/covid19crc)



Apply to join the coalition's **Clinical Epidemiology WG**:



[bit.ly/3tX3Kbf](https://bit.ly/3tX3Kbf)

[WorkingGroups@covid19crc.org](mailto:WorkingGroups@covid19crc.org)



**THANK YOU  
FOR YOUR  
PARTICIPATION**

**C**  **VID-19**  
**Clinical Research Coalition**

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Drugs for Neglected Diseases *Initiative*