

# Scientific solidarity in the face of the COVID-19 pandemic: researchers, publishers, and medical associations

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**Abstract:** In the face of COVID-19, the scientific community has rapidly come together to address this outbreak in an open and collaborative manner to support the global response to this outbreak by rapidly sharing and highlighting research data and relevant findings. COVID-19 research is being published at a furious pace. Over 6,000 articles have been published as of 20 April 2020, and at least 15 online resource centers/websites for COVID-19 have been created by publishers to enable fast and free access to the latest research, evidence, and data available. Moreover, many evidence-based guidelines for COVID-19 have been issued based on academic articles and summaries of the experiences of frontline medical personnel. Various academic medical associations are also actively sharing information and providing technical support. As an example, 93 guides/proposals/responses to COVID-19 have been issued so far by 50 medical associations in Japan. However, few publications and national situation reports have provided information on the number of infected healthcare workers (HCWs). More publications and national situation reports are urgently needed to provide scientific information to devise specific infection prevention and control measures in order to protect HCWs from infection.

**Keywords:** COVID-19, publication, sharing data, guideline, healthcare worker

The COVID-19 pandemic is rapidly evolving, and over 150,000 people have unfortunately lost their lives to COVID-19 so far. There are 2,314,621 confirmed cases globally as of April 20, 2020; there are more than 100,000 confirmed cases in the United States (723,605), Spain (195,944), Italy (178,972), Germany (141,672), the United Kingdom (120,071), and France (111,463), and case numbers are increasing rapidly (1).

Rapidly evolving healthcare emergencies necessitate the quick dissemination of research. In the face of a common enemy - COVID-19 - the scientific community has rapidly come together to address this outbreak in an open and collaborative manner to support the global response to this outbreak by rapidly sharing and highlighting research data and relevant findings.

Along with medical personnel, researchers are playing a vital part. Since the early stages of the COVID-19 outbreak in China in early 2020, researchers have been working to share timely and transparent epidemiological and clinical data (2-4); the pathogen's genome has been sequenced, and those findings have been shared worldwide (5,6). Such cooperation is crucial to guiding clinical practice and public health policy. As the epidemic has spread, researchers worldwide have made progress in detecting the virus

and analyzing its genetics, routes of transmission, the natural history of infection in humans, rapid detection and diagnosis, clinical treatment, drug screening, and vaccine development (7-13).

COVID-19 research is being published at a furious pace. The WHO COVID-19 Database is gathering the latest scientific findings and knowledge (primarily journal articles) on COVID-19; according to the Database, over 6,000 articles have been published as of 20 April 2020 (14). The following journals have separately published at least 50 articles - BMJ, Nature, The Lancet, Science, Journal of Infection, The Lancet Infectious Diseases, Journal of Medical Virology, JAMA, *etc.* Many international academic journals such as the New England Journal of Medicine have initiated rapid review and publication procedures for COVID-19 articles to facilitate the real-time sharing of scientific information (15).

Moreover, as part of the response to the ongoing COVID-19 pandemic across the world, many publishers- such as Elsevier, Springer, and Wiley - have created a COVID-19 online resource center or website (Table 1) in order to enable fast and free access to the latest research, evidence, and data available to assist researchers, medical personnel, policy makers, and

**Table 1. COVID-19 online resource centers/websites allowing free access to the latest research available**

Created by	Online resource centers/websites	URL
BMJ	Coronavirus (covid-19) Hub	<a href="http://www.bmj.com/coronavirus">www.bmj.com/coronavirus</a>
Cambridge University Press	Coronavirus Free Access Collection	<a href="http://www.cambridge.org/core/browse-subjects/medicine/coronavirus-free-access-collection">www.cambridge.org/core/browse-subjects/medicine/coronavirus-free-access-collection</a>
Cell Press	Coronavirus Resource Hub	<a href="http://www.cell.com/2019-nCoV">www.cell.com/2019-nCoV</a>
Chinese Medical Association Publishing House	COVID-19 Academic Research Communication Platform	<a href="http://www.medjournals.cn/COVID-19/index.do?sessionId=14D55661F9CF0965F473D0B5F4EB8974">www.medjournals.cn/COVID-19/index.do?sessionId=14D55661F9CF0965F473D0B5F4EB8974</a>
Elsevier	Novel Coronavirus Information Center	<a href="http://www.elsevier.com/connect/coronavirus-information-center">www.elsevier.com/connect/coronavirus-information-center</a>
JAMA Network	Coronavirus Disease 2019 (COVID-19)	<a href="http://www.jamanetwork.com/journals/jama/pages/coronavirus-alert">www.jamanetwork.com/journals/jama/pages/coronavirus-alert</a>
The Lancet	COVID-19 Resource Centre	<a href="http://www.thelancet.com/coronavirus">www.thelancet.com/coronavirus</a>
U.S. National Library of Medicine	LitCovid	<a href="http://www.ncbi.nlm.nih.gov/research/coronavirus">www.ncbi.nlm.nih.gov/research/coronavirus</a>
New England Journal of Medicine	Coronavirus (Covid-19)	<a href="http://www.nejm.org/coronavirus">www.nejm.org/coronavirus</a>
Oxford University Press	Resources on COVID-19	<a href="http://www.academic.oup.com/journals/pages/coronavirus?ce=us&amp;lang=en&amp;">www.academic.oup.com/journals/pages/coronavirus?ce=us&amp;lang=en&amp;</a>
PLOS	COVID-19 Updates	<a href="http://www.plos.org/covid-19">www.plos.org/covid-19</a>
Science	Coronavirus: Research, Commentary, and News	<a href="http://www.sciencemag.org/collections/coronavirus">www.sciencemag.org/collections/coronavirus</a>
Springer Nature	SARS-CoV-2 and COVID-19	<a href="http://www.springernature.com/gp/researchers/campaigns/coronavirus">www.springernature.com/gp/researchers/campaigns/coronavirus</a>
SSRN	Coronavirus and Infectious Disease Research page	<a href="http://www.ssrn.com/index.cfm/en/coronavirus">www.ssrn.com/index.cfm/en/coronavirus</a>
Wiley Online Library	COVID-19: Novel Coronavirus Outbreak	<a href="https://novel-coronavirus.onlinelibrary.wiley.com">https://novel-coronavirus.onlinelibrary.wiley.com</a>

**Table 2. Some of the guides/proposals/responses to COVID-19 issued by medical associations in Japan**

Issued by	Date	Guides/proposals/responses to COVID-19	URL
Japanese Association for Infectious Diseases	Jan. 28, 2020	Responses to the Novel Coronavirus Disease (2019-nCoV)	<a href="http://www.kansensho.or.jp/uploads/files/topics/2019ncov/2019ncov_taiou_200128.pdf">www.kansensho.or.jp/uploads/files/topics/2019ncov/2019ncov_taiou_200128.pdf</a>
	Feb. 3, 2020	Measures to Deal with the Novel Coronavirus Disease (2019-nCoV) – Seeing Patients in General Practice	<a href="http://www.kansensho.or.jp/uploads/files/topics/2019ncov/2019ncov_sinryo_200203.pdf">www.kansensho.or.jp/uploads/files/topics/2019ncov/2019ncov_sinryo_200203.pdf</a>
	Feb. 26, 2020	Guidance on Treating COVID-19 with Antivirals (1st Edition)	<a href="http://www.kansensho.or.jp/uploads/files/topics/2019ncov/covid19_antiviral_drug_200227.pdf">www.kansensho.or.jp/uploads/files/topics/2019ncov/covid19_antiviral_drug_200227.pdf</a>
	Feb. 21, 2020	Novel Coronavirus Disease (COVID-19)-From Protective Measures at Ports and Airports to the Stages of Transmission	<a href="http://www.kansensho.or.jp/uploads/files/topics/2019ncov/covid19_mizugwa_200221.pdf">www.kansensho.or.jp/uploads/files/topics/2019ncov/covid19_mizugwa_200221.pdf</a>
	Apr. 2, 2020	Guidance on Clinical Responses to COVID- To Avoid Confusion in Medical Settings and Save the Lives of Patients with Severe Symptoms	<a href="http://www.kansensho.or.jp/uploads/files/topics/2019ncov/covid19_rinsho_200402.pdf">www.kansensho.or.jp/uploads/files/topics/2019ncov/covid19_rinsho_200402.pdf</a>
Japanese Society for Virology	Feb. 10, 2020	Novel Coronavirus Disease	<a href="http://jsv.umin.jp/news/news200210.html">http://jsv.umin.jp/news/news200210.html</a>
Japanese Society of Intensive Care Medicine	Feb. 10, 2020	ICU Responses to the Novel Coronavirus Disease (2019-nCoV)	<a href="http://www.jsicm.org/news/news200210.html">www.jsicm.org/news/news200210.html</a>
Japanese Association for Acute Medicine	Mar. 9, 2020	Responses to the Novel Coronavirus Disease (COVID-19)	<a href="http://www.jaam.jp/info/2020/info-20200309.html">www.jaam.jp/info/2020/info-20200309.html</a>
	Mar. 23, 2020	Basic Notes on Artificial Respiration and ECMO for Patients with COVID-19 in Acute Respiratory Failure (2nd Edition)	<a href="http://www.jaam.jp/info/2020/files/info-20200323.pdf">www.jaam.jp/info/2020/files/info-20200323.pdf</a>
Japanese Society for Infection Prevention and Control	Mar. 10, 2020	Guidelines for Responses to COVID at Medical Facilities	<a href="http://www.kankyokansen.org/uploads/uploads/files/jsipc/COVID-19_taioguide2.1.pdf">www.kankyokansen.org/uploads/uploads/files/jsipc/COVID-19_taioguide2.1.pdf</a>
Japanese Society of Public Health	Mar. 11, 2020	Overview of a Strategy to Respond to COVID Clusters	<a href="http://www.jspb.jp/covid/files/COVID-19_031102.pdf">www.jspb.jp/covid/files/COVID-19_031102.pdf</a>
Japan Epidemiological Association	Mar. 12, 2020	Proposal of an Active Epidemiological Survey on COVID	<a href="https://jeaweb.jp/covid/pronouncement/teian20200312.pdf">https://jeaweb.jp/covid/pronouncement/teian20200312.pdf</a>
Japan Medical Association	Apr. 13, 2020	Novel coronavirus disease– Notification of Prefectural Medical Associations	<a href="http://www.med.or.jp/doctor/kansen/novel_corona/009135.html">www.med.or.jp/doctor/kansen/novel_corona/009135.html</a>
Japanese Medical Science Federation	Apr. 10, 2020	Recommendations when regarding Surgery on Patients testing positive for or suspected of having the Novel Coronavirus Disease (Revised Version)	<a href="http://www.jssoc.or.jp/aboutus/coronavirus/info/20200402.pdf">www.jssoc.or.jp/aboutus/coronavirus/info/20200402.pdf</a>

others who are working to address this pandemic.

Based on academic articles providing scientific knowledge and the experiences of frontline medical personnel, many evidence-based guidelines for COVID-19 have been issued to better guide clinical practice and develop standard preventive measures. WHO has issued a series of documents providing technical guidance on COVID-19 (16). Thus far, China has issued seven editions of "Clinical Protocols for the Diagnosis and Treatment of COVID-19" and six versions of "COVID-19 Prevention and Control Protocol" (17). The latest versions are provided in Chinese and English. In addition, the "Handbook of COVID-19 Prevention and Treatment" can be freely accessed and downloaded from Alibaba Cloud (18) and is currently available in Chinese, English, Italian, French, Spanish, Japanese, German, Persian, Indonesian, and Arabic; other language versions contributed by volunteers will also be shared as available to provide practical suggestions and references for medical personnel worldwide.

Various medical associations are also actively sharing information and providing technical support to fight this novel virus. Due to the epidemic, many academic conferences, and especially international conferences, were cancelled, postponed, or convened as virtual events *via* telecoms and web to reduce the concentration and flow of personnel. Despite that setback, academic societies promptly organized experts to conduct relevant research and they issued guidelines in their respective fields.

Taking Japan as an example, we did an online survey and the results showed that 93 guides/proposals/responses to COVID-19 have been issued so far by 50 medical associations in Japan, such as the guides issued by the Japanese Association for Infectious Disease, Japanese Association for Acute Medicine, and Japanese Society for Infection Prevention and Control (Table 2).

The COVID-19 pandemic is a common challenge faced by mankind in an age of globalization. Ensuring broad access to information based on scientific knowledge is a key element. The scientific community is coming together to lead the way in developing a measured and science-based response to the COVID-19 pandemic, and especially in terms of prevention, diagnosis, and treatment, while also accelerating research and development of vaccines and therapeutics in this crucial stage in support of the global efforts to fight this crisis.

Meanwhile, in this crucial stage, a key piece of information that needs to be ascertained is infection of healthcare workers (HCWs). As of 8 April 2020, 22,073 cases of COVID-19 among HCWs from 52 countries have been reported to the WHO. At the present time, however, there is no systematic reporting of COVID-19 infections among HCWs to the WHO, so this number probably under-represents the true number of HCWs infected with COVID-19 globally (19).

Understanding infection in HCWs is critical to devising specific infection prevention and control measures to protect HCWs from infection; more publications and national situation reports are urgently needed to provide scientific information on COVID-19.

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- Received April 13, 2020; Revised April 20, 2020; Accepted April 21, 2020.
- Released online in J-STAGE as advance publication April 22, 2020.
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