

On the use of corticosteroids for 2019-nCoV pneumonia

In their Comment about the use of corticosteroids to treat 2019 novel coronavirus (2019-nCoV) lung injury, Clark Russell and colleagues¹ summarise the available clinical evidence on corticosteroid to treat patients with severe human coronavirus infections (severe acute respiratory syndrome [SARS] coronavirus and Middle East respiratory syndrome coronavirus), and other severe respiratory virus infections. In accordance with current WHO guidance,² Russell and colleagues¹ recommend that corticosteroids should not be used in 2019-nCoV-induced lung injury or shock, except in the setting of a clinical trial. The Comment¹ contributes to a better understanding of corticosteroid treatment in viral pneumonia. However, as a team of front-line physicians from China, we have a different perspective.

As mentioned by the authors,¹ the studies referred to in the paper were mostly observational studies. In clinical settings, physicians tend to use corticosteroids in the most critically ill patients. Therefore, selection bias and confounders in observational studies might contribute to any observed increased mortality in patient groups treated with corticosteroids. Although attempts were made to adjust for confounding factors in the studies, conclusive inference should not be made. Also, we question the interpretation of the systematic review about effective treatments for SARS.³ Russell and colleagues state that “four studies provided conclusive data, all indicating harm”.¹ These four studies were not definitive and only showed evidence of possible harm, whereas the results of 25 other studies were inconclusive, leading the original authors to state that the totality of data are inconclusive, and because of methodological limi-

tations, it was not possible to make any recommendation. Inconclusive clinical evidence should not be a reason for abandoning corticosteroid use in 2019-nCoV pneumonia.

Moreover, there are studies supporting the use of corticosteroids at low-to-moderate dose in patients with coronavirus infection. For example, in a retrospective study of 401 patients with SARS,⁴ proper use of corticosteroids was found to reduce mortality and shorten the length of stay in hospital for critically ill patients with SARS without causing secondary infection and other complications. Relevant research has also been done for other virus-associated respiratory diseases, such as influenza-associated pneumonia. For example, in a prospective cohort study enrolling 2141 patients with influenza A (H1N1)pdm09 viral pneumonia from 407 hospitals in China,⁵ low-to-moderate dose of corticosteroids (25–150 mg/day methylprednisolone or equivalent) reduced mortality in patients with oxygen index lower than 300 mm Hg. Besides, a systematic review⁶ suggested corticosteroids could reduce mortality and the need for mechanical ventilation in patients with severe community-acquired pneumonia.

Because of methodological limitations in the available evidence, the use of corticosteroids remains controversial. We acknowledge the potential risks associated with high-dose corticosteroids in treating 2019-nCoV pneumonia, such as secondary infections, long-term complications, and prolonged virus shedding. However, in critically ill patients, the overwhelming inflammation and cytokine-related lung injury might cause rapidly progressive pneumonia. Given the inconclusive evidence and urgent clinical demand, physicians from the Chinese Thoracic Society have developed an expert consensus statement on the use of corticosteroids in 2019-nCoV pneumonia.⁷ All members of the

expert panel participated in treating patients with 2019-nCoV pneumonia. The expert consensus statement is based both on the available published scientific literature and relevant research by panel members, and it was brought together through e-mail correspondence and online meetings.

According to the expert consensus statement, the following basic principles should be followed when using corticosteroids: (1) the benefits and harms should be carefully weighed before using corticosteroids; (2) corticosteroids should be used prudently in critically ill patients with 2019-nCoV pneumonia; (3) for patients with hypoxaemia due to underlying diseases or who regularly use corticosteroids for chronic diseases, further use of corticosteroids should be cautious; and (4) the dosage should be low-to-moderate (≤ 0.5 – 1 mg/kg per day methylprednisolone or equivalent) and the duration should be short (≤ 7 days).

Corticosteroid treatment is a double-edged sword. In line with the expert consensus, we oppose liberal use of corticosteroids and recommend short courses of corticosteroids at low-to-moderate dose, used prudently, for critically ill patients with 2019-nCoV pneumonia. Existing evidence is inconclusive, and even systematic reviews and meta analyses on this topic reach differing conclusions. Therefore, in line with Russell and colleagues,¹ we believe that there is a need for well designed randomised controlled trials in the future to promote a more solid foundation for treatment recommendations.

We declare no competing interests. JZ, YH, RD, and BC are members of the panel that created the expert consensus statement on the use of corticosteroids in patients with 2019-nCoV pneumonia. We thank Zhenshun Cheng, Yang Jin, Min Zhou, Jing Zhang, and Jieming Qu for contributing to the development of the expert consensus on the use of corticosteroids in patients with 2019-nCoV pneumonia. We extend great thanks to Peter W Horby and Frederick G Hayden for assistance in writing this Correspondence.

Lianhan Shang, Jianping Zhao, Yi Hu, Ronghui Du, *Bin Cao
caobin_ben@163.com



Barcroft Media/Contributor/Getty Images

Published Online
February 11, 2020
[https://doi.org/10.1016/S0140-6736\(20\)30361-5](https://doi.org/10.1016/S0140-6736(20)30361-5)
For the Chinese translation see Online for appendix

Submissions should be made via our electronic submission system at <http://ees.elsevier.com/thelancet/>

Beijing University of Chinese Medicine, Beijing, China (LS); Department of Pulmonary and Critical Care Medicine, National Clinical Research Center for Respiratory Diseases, China-Japan Friendship Hospital, Beijing 100029, China (LS, BC); Institute of Respiratory Medicine, Chinese Academy of Medical Sciences, Beijing, China (LS, BC); Department of Pulmonary and Critical Care Medicine, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China (JZ); Department of Pulmonary and Critical Care Medicine, The Central Hospital of Wuhan, Wuhan, China (YH); Department of Pulmonary and Critical Care Medicine, Wuhan Pulmonary Hospital, Wuhan, China (RD); Department of Respiratory Medicine, Capital Medical University, Beijing, China (BC); and Tsinghua University-Peking University Joint Center for Life Sciences, Beijing, China (BC)

- 1 Russell CD, Millar JE, Baillie JK. Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury. *Lancet* 2020; published online Feb 7. [https://doi.org/10.1016/S0140-6736\(20\)30317-2](https://doi.org/10.1016/S0140-6736(20)30317-2).
- 2 WHO. Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected. Jan 28, 2020. [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected) (accessed Feb 9, 2020).
- 3 Stockman LJ, Bellamy R, Garner P. SARS: systematic review of treatment effects. *PLoS Med* 2006; **3**: e343.
- 4 Chen RC, Tang XP, Tan SY, et al. Treatment of severe acute respiratory syndrome with glucocorticoids: the Guangzhou experience. *Chest* 2006; **129**: 1441-52.
- 5 Li H, Yang SG, Gu L, et al. Effect of low-to-moderate-dose corticosteroids on mortality of hospitalized adolescents and adults with influenza A(H1N1)pdm09 viral pneumonia. *Influenza Other Respir Viruses* 2017; **11**: 345-54.
- 6 Siemieniuk RAC, Meade MO, Alonso-Coello P, et al. Corticosteroid therapy for patients hospitalized with community-acquired pneumonia: a systematic review and meta-analysis. *Ann Intern Med* 2015; **163**: 519.
- 7 Zhao JP, Hu Y, Du RH, et al. Expert consensus on the use of corticosteroid in patients with 2019-nCoV pneumonia (in Chinese). *Zhonghua Jie He He Hu Xi Za Zhi* 2020; **43**: E007.



Timely research papers about COVID-19 in China

The 2019 novel coronavirus disease (COVID-19; previously known as 2019-nCoV) outbreak that originated from Wuhan, Hubei province, China, at the end of 2019 was declared a public health emergency of international concern on Jan 30, 2020, by WHO.¹ As a newly appearing infectious disease, COVID-19 garnered great research interest. According to a recent report

in *Nature*,² at least 54 academic papers about COVID-19 were published in English-language journals by Jan 30, 2020.

We searched major Chinese databases including the China National Knowledge Internet and WANFANG Data. As of Feb 3, 2020, just 23 Chinese-language papers on COVID-19 were published. These publications mainly focused on epidemiology, clinical features of COVID-19, and the structure or genetics of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Many of the research papers about COVID-19 in international journals were written by researchers in China, which led to great concerns because these findings cannot directly benefit frontline health professionals and policy makers because of the language barrier. It is critical for health science to be published in English-language journals to facilitate communication and enable global coordination and timely epidemic response. However, some media were concerned that Chinese researchers within academic organisations concentrated on publishing papers in prestigious international journals but paid inadequate attention to epidemic prevention of COVID-19 and neglected to disseminate their findings within Chinese-language journals.^{3,4} A recent statement by the Ministry of Science and Technology of China also encouraged researchers to focus their efforts on epidemic prevention and to publish their results in Chinese.⁵

The emphasis on publishing clinical research in English helps to facilitate knowledge exchange between Chinese scientists and the rest of the world. We hope the research community will make efforts to disseminate all findings relevant to the outbreak of COVID-19 in Chinese in addition to English publishing outlets.

For example, clinical research papers about COVID-19 and SARS-CoV-2 in any *Lancet* journal were translated into Chinese, and these translated Articles

were provided rapidly to the public in China free of charge.

Broad dissemination in both Chinese and English will accomplish the goals of communicating timely and crucial findings to the international scientific community, while also disseminating this information to health-care workers on the frontline who need to understand the epidemiological and clinical features of COVID-19. This strategy will improve effective control strategies to ultimately contain the virus and protect the health of the public.

We declare no competing interests. Y-TX, WL, QZ, YJ, W-WR, and L-NZ contributed equally to this Correspondence.

*Yu-Tao Xiang, Wen Li, Qinge Zhang, Yu Jin, Wen-Wang Rao, Liang-Nan Zeng, Grace K I Lok, Ines H I Chow, Teris Cheung, Brian J Hall
xyutly@gmail.com

Unit of Psychiatry, Institute of Translational Medicine, Faculty of Health Sciences (Y-TX, WL, YJ, W-WR, L-NZ, GKIL, IHIC), Global and Community Mental Health Research Group, Department of Psychology (BJH), and Center for Cognition and Brain Sciences (Y-TX, WL, YJ, W-WR, IHIC), University of Macau, Macao SAR, China; The National Clinical Research Center for Mental Disorders & Beijing Key Laboratory of Mental Disorders, Beijing Anding Hospital & the Advanced Innovation Center for Human Brain Protection, Capital Medical University, Beijing, China (QZ); Department of Neurosurgery, The Affiliated Hospital of Southwest Medical University, Sichuan, China (L-NZ); Kiang Wu Nursing College of Macau, Macau SAR, China (GKIL); School of Nursing, Hong Kong Polytechnic University, Hong Kong SAR, China (TC); and Health, Behavior, and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA (BJH)

- 1 WHO. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). Jan 30, 2020. [https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)) (accessed Feb 1, 2020).
- 2 Stoye E. China coronavirus: how many papers have been published? *Nature* 2020; published online Jan 30. DOI:10.1038/d41586-020-00253-8.
- 3 Du CC. Ministry of Science and Technology: efforts should not be focused on publishing papers before epidemic prevention and control tasks are completed. Jan 30, 2020. <http://www.caixin.com/2020-01-30/101509614.html> (accessed Feb 1, 2020; in Chinese).

Published Online
February 17, 2020
[https://doi.org/10.1016/S0140-6736\(20\)30375-5](https://doi.org/10.1016/S0140-6736(20)30375-5)