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## Commentary

## Novel coronavirus: how things are in Wuhan

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Wuhan, a metropolis of 11 million people and home to thousands of foreign students, scientists, teachers and businessmen, is currently facing one of the deadliest outbreaks of a novel coronavirus (2019n-CoV). The newly emerged coronavirus, 2019n-CoV, was detected in December 2019 and the first fatality was reported at the start of 2020 [1]. During first month of the outbreak, there were 16 500 confirmed cases, 360 fatalities and over 20 000 suspected cases [2]. The government declared an emergency and Wuhan and several cities nearby are in lockdown to prevent the rapid spread of the virus.

Currently, healthcare workers are in a critical stage. There is a great risk of medical and clinical staff (and workers) becoming infected with 2019n-CoV because of their direct interaction with infected and suspected individuals. A total of 15 medical staff have been infected, and one doctor has died from 2019n-CoV infection in Wuhan hospital [3]. At Hubei General Hospital (one of the most famous hospitals in Wuhan, also known as Renmin Hospital), a large number of clinical workers have been infected and admitted to the hospital; however, some of them have asked to be isolated at

home due to the scarcity of sickbeds and clinical supplies. Every day the dramatic increase in the number of infected individuals is causing a huge burden on the medical staff. There is a shortage of doctors and nurses, who are compelled to work longer without taking enough rest.

Working for long hours, disturbed daily routines including eating and sleeping schedules and fear of being infected are key factors that increase the risks of stress and anxiety for doctors and nurses, and may lead to their working less efficiently in terms of providing better treatment and care to patients. Under these pressures, some medical staff have experienced an emotional breakdown at the frontline [4]. The situation worsened for medical staff after the death of Dr Liang Wudong, who contracted 2019n-CoV. The increasing number of suspected individuals every day and the shortage of laboratory staff could increase the workload and may delay routine clinical tests for infected or suspected individuals. Furthermore, the shortage of protective coverings further increases the chances of getting the infection [5]. Staff have been asked to use substandard masks, putting them at greater risk [4]. The healthcare authorities have stepped up efforts to overcome the problems and have sent thousands of medical personnel including army medical staff to Wuhan. To cope with further shortages, the designated hospitals have transferred medical and clinical testing staff to frontline departments from other departments such as oncology, orthopaedics and medicines. In addition, healthcare workers from several undesignated healthcare units have been transferred to designated hospitals for coronavirus-infected patients. In order to increase the space and availability of sickbeds, regular hospital patients (not infected with 2019n-CoV) are being moved out of hospitals, and admissions for new regular patients are being delayed. Several hospitals are setting up online medical consultations for these patients to discuss their conditions and seek help. Furthermore, some companies are working to make diagnostic kits available on a large scale, but it may take some time. However, the increasing number of patients every day and the expected peak in

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the coming days [6] may cause a further shortage of medical staff and health and logistic issues for the frontline healthcare provider.

Specific areas have been set aside inside designated hospitals to provide services according to the severity of the disease. Suspected and confirmed cases are given diagnostic and treatment facilities in an isolated and protected environment; however, individuals in a critical condition are given treatment on a priority basis. In some cases, allopathic medicines are advised in combination with Chinese medicine such as Huoxiangzhengqi (for gastrointestinal problems), Jinhua Qinggan, Lianhua Qingjia, Shufengjiedu and Fangfengtongsheng (for fatigue and fever). Psychological counselling is now available to handle the anxiety and fear among patients. Confirmed patients have been given access to the internet and provided with healthy food; communication with relatives is through mobile video calls. Online assistance using a video chat between doctor and patient (suspected or confirmed) is also used in some hospitals. Some doctors and nurses prefer to communicate via mobile phone rather than direct contacting with the admitted patient. Patients are discharged and sent back home in protected and disinfected vehicles after they have recovered from the fever, respiratory symptoms are improved and the nucleic acid test is negative.

Despite these services, new suspected and/or confirmed individuals are facing problems. The scarcity of sickbeds is causing confirmed patients to wait for a long time before they are admitted to a hospital, while the availability of sickbeds depends on recovery of already admitted patients. However, failure to provide admitted patients with protection measures such as goggles and suits, the shortage of medicines and the lack of isolated rooms are negatively affecting the recovery of patients. In some places, rapid measurement kits are not available. A pharyngeal swab-based test needs to be repeated for confirmation, which delays the process of admitting infected patients. This may increase the severity of symptoms and the risk of fatality. Some of the infected individuals were found to have mild symptoms and rather than admitting them they were offered therapy and were advised to stay in isolated rooms. To cope with the increasing number of infected people, two new hospitals are nearing completion and will be able to house about 2300 beds [7]. However, the daily the numbers of confirmed and suspected cases are increasing in the thousands, thus raising concern about future treatment and management strategies.

Scientists in China are working efficiently, as observed by the early detection of the virus, sequencing of its first genome, designing of rapid detection kits, isolation of the virus in the laboratory and developing a vaccine [1,8,9]. A group of researchers in the Wuhan Institute of Virology is studying the genome complexity, which may lead to uncovering unique structural features and drug target sites. Moreover, research groups from the Wuhan Institute of Virology and Academy of Military Medical Sciences have identified some broad-spectrum antiviral drugs that may have potential inhibitory effects against 2019-nCoV. Researchers and Scientists at the Wuhan Institute of Virology, Wuhan University, Huazhong

University of Science and Technology and several other laboratories in Wuhan and across the country are working to find ways of prevention and treatment in order to prevent further spread. Broad range combinational therapies including lopinavir–ritonavir and interferon antiviral peptides are being evaluated for use against 2019n-CoV.

Overall the current measures to control the 2019n-CoV are being implemented with care and strictness. The entrances of residential communities, dormitories and public places are restricted and residents entering are monitored for temperature and related symptoms. People from Wuhan are registered and kept under medical observation in some cities in China; meanwhile, their suspected contacts may be tracked to isolate them for monitoring purposes. Farmers are being directed to maintain hygiene, and seafood markets are being monitored in major cities.

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### Author contributions

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