


Updates on Wuhan 2019 novel coronavirus epidemic

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What emerged in December 2019 as a cluster of respiratory ailments with inexplicable etiological findings in Wuhan has now claimed roughly 259 lives, sickened nearly 12 thousand more, and spread to at least 26 more nations including Hong Kong, Taiwan, and Macao.¹ Confirmed to be caused by a coronavirus, the outbreak is believed to start from the Huanan Wet Seafood Wholesale Market in Wuhan, which is the capital city of the Hubei Province, China. The World Health Organization (WHO), after being informed about the viral disease on 31st December, believes that an animal source is the most likely primary source of the pathogenic disease.²⁻⁵

In Virus Taxonomy, coronaviruses belong to the subfamily Orthocoronavirinae. These are known to be a family of enveloped non-segmented positive-sense ribonucleic acid (RNA) viruses belonging to the family Coronaviridae and the order Nidovirales. There are four known genera for coronaviruses, namely: alpha-, beta-, gamma-, and delta-coronavirus. All of the four genera are believed to have a zoonotic origin and infect both animals and humans. Whereas the alpha and beta genera originate from bats, the gamma and delta genera are derived from avian and pig gene pools.⁶⁻⁹

Given the high occurrence of coronaviruses, the large genetic variety and recurrent recombination of their genomes, and increasing human-animal interface undertakings, new coronaviruses are likely to emerge sporadically in humans owing to periodic spillover events and common cross-species infections. This explains the human infections of novel coronaviruses, such as Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) in 2002, and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in 2012. Once in humans, the virus has the likelihood to spread from human-to-human, mainly causing respiratory diseases.¹⁰⁻¹²

In late December 2019, some local health facilities reported cases of patients with pneumonia of unknown causes that were epidemiologically related to seafood and wet animal wholesale

market in Wuhan, Hubei Province, China.⁵ The Chinese Center for Disease Control and Prevention (CDC) deployed a team on 31st December to work with the Hubei Provincial Health Commission to investigate the epidemiological and etiological underlyings of the disease. Following isolation of the virus from lower respiratory tract samples by a number of Chinese scientists, deep genome sequencing analysis revealed the virus as a new betacoronavirus.¹³ The virus was then named by WHO as the 2019 novel coronavirus (2019-nCoV). According to a recent publication by Chan et al.,¹⁴ the disease has shown person-to-person or nosocomial transmission features, implying that it can easily pass on from one person-to-another. One of the authors, Dr. Yuen Kwok-Yung, describes the disease as “asymptomatic walking pneumonia” due to its ability to be transmitted even within the 3 to 14 days incubation period.¹⁵ Another coauthor of a different article, Prof. Cao Bin, suggested that the Wuhan seafood market might not be the only source of the novel coronavirus. His reasoning followed from the fact that 14 of the first 41 hospitalized patients had no contacts with the Wuhan seafood market, signifying that there is the probability of other origins of the virus.¹⁰ Despite this suggestion, the virus is now widely called the “Wuhan virus.”

From the onset of the outbreak, 27 patients were originally reported at Wuhan, which was later updated to 41 on 11th January 2020. Seven of the cases were classified as severe, and one person was reported dead on the 11th of January.¹⁶ About 3 weeks later, on the 1st of February, 2020, updates on the spread of the disease indicate that over 11 900 people have been infected worldwide. Figure 1 shows how many people have been confirmed to be infected by the 2019-nCoV disease in different nations including mainland China (11 793 cases) and its special administrative regions Hong Kong (13 cases), Macao (7 cases), and Taiwan (10 cases).¹ The same Figure provides information on how many suspected cases are still

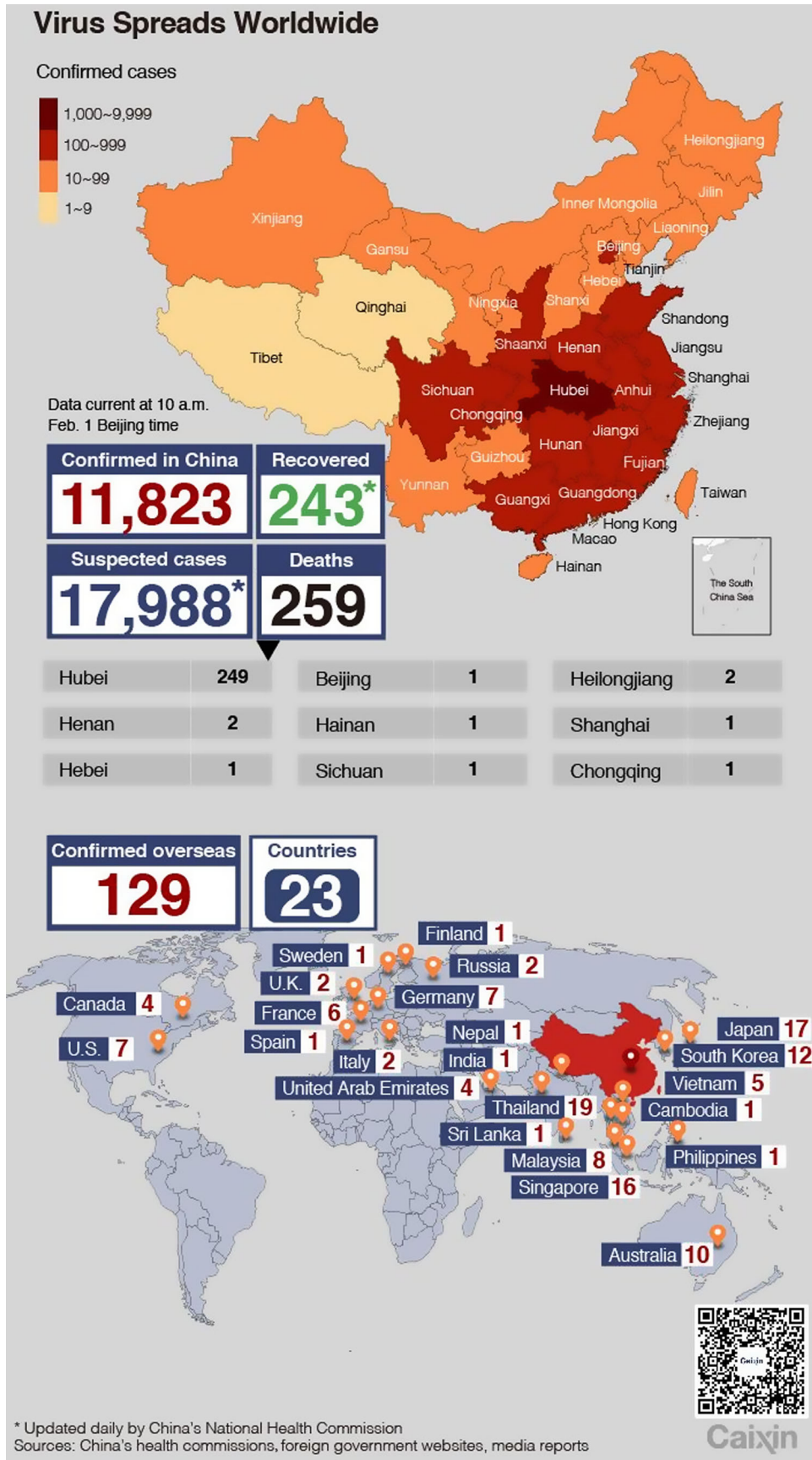


FIGURE 1 Confirmed cases of 2019-nCoV globally, 1st February, 2020¹

pending in mainland China, the death toll, and how many patients have been cured and discharged so far. Looking at the exponential increase in infections, as confirmed by a recent publication in the *Journal of Medical Virology*,¹⁷ experts believe that the actual number of cases is far beyond the reported figures. Prof Neil Ferguson, a public health expert at Imperial College, is of the view that the total number of infections globally could reach 100 000 by now.¹⁸ Another publication in the *Lancet Medical Journal* by researchers from Hong Kong estimates there could be 75 815 people in Wuhan who were infected with the novel coronavirus as of 25th January.¹⁹

Before offering his resignation, the Wuhan Mayor, Mr. Zhou Xianwang, who has played a leading role in the fight against the sudden outbreak at its epicenter, has admitted that the city authorities delayed in disclosing information on the epidemic in a timely manner. In addition to the Mayor, several lower-level officials across China have been blamed for shortcomings in dealing with disease control.¹ Among them are Tang Zhihong, who has now been relieved of her position as head of the health department in Huanggang city of the Hubei province,²⁰ Yao Zhongjing, a district market regulator at Jinan, Shandong province, and Tang Hu, head of a district health authority in Yueyang, Hunan province.¹

In attempts to curtail the spread of the virus during what is the country's busiest travel season, many provincial authorities have announced the end of the lunar new year holidays would be extended to at least 2nd February across China, and to 9th February in Shanghai. Non-essential enterprises are also delayed until February 9th in the provinces of Jiangxi, Shandong, Anhui, Guangdong, Zhejiang, Jiangsu, and Yunnan. The Chongqing municipality has equally delayed non-essential enterprises in the administrative area to 9th February, while the Hubei province has delayed all enterprises

until 13th February.²¹ Many officials have also broadened sweeping restrictions on travel activities across the republic, with several provinces including Hubei remaining under strict lockdown. Long-distance bus services across the whole of China have also been banned, and according to some news sources, watch drones have been dispatched across the country to scold civilians who do not adhere to the strict regulations of wearing masks.²²

Authorities believe that the suspension of long-distance bus services, which is the cheapest mode of transport in the country, is likely to slow down the return of millions of migrant workers who have traveled over the lunar New Year celebration. In similar veins, by extending the end of the holidays from Friday to Sunday, the leaders hoped to shrink the number of mass gatherings and limit the spread of the epidemic. On the other hand, many countries including Japan, the United States, Singapore, the United Kingdom, North Korea, Papua New Guinea, Malaysia, Philippines, and Hong Kong have temporarily banned visas to either all Chinese citizens or citizens from the Hubei province in a bid to stem the spread of the virus.²³

Meanwhile, there have been growing concerns that health facilities in Wuhan city were severely overstretched. Specific mentions were made of beds running out, as well as test kits and basic protective equipment. In response to the crisis, the city officials announced the ongoing construction of two designated makeshift infirmaries to deal with the expected upsurge in cases. Both hospitals, named Huoshenshan and Leishenshan: meaning "Fire God Mountain" and "Thunder God Mountain respectively," are said to be able to accommodate 2500 beds collectively, after their completion on 5th February.²⁴ An image of the current state of the Huoshenshan Hospital is shown in Figure 2.²⁵



FIGURE 2 Huoshenshan Hospital takes shape in Wuhan, Hubei province, on 30th January, 2020²⁵

In fear of the threatening transmission rate of the outbreak, many countries have announced their intentions to evacuate their citizens from the Wuhan city, the epicenter of the outbreak. However, in a statement issued on Monday 28th of January by the director-general of WHO at a meeting with State Councilor Wang Yi in Beijing, Dr. Tedros Adhanom Ghebreyesus said he is confident in China's capabilities to curb the virus and did not think it was necessary for foreigners to be evacuated from the Hubei province. At the same meeting, he also declared his approval of the Chinese government's measures to control the epidemic. That notwithstanding, some countries have already evacuated their citizens from Wuhan, the central point of the outbreak. Among them are South Korea, Australia, Japan, USA, and a number of EU countries. Many more nations, such as New Zealand, Canada, Malaysia, India, Turkey, Bangladesh, and Egypt are equally arranging flights to evacuate their nationals. All of these nations have plans of quarantining the evacuees for a minimum of 14 days, which is believed to be the longest incubation period of the 2019-nCoV. This would allow health specialists to monitor their health carefully, treat any ailments that might show up within the 14 days, and also limit the human-to-human spread of infections in the various nations.²⁶

At a press conference at Geneva on 30th January, the director-general of the WHO declared the outbreak as a Public Health Emergency of International Concern and called on authorities across the world to work together to limit the rapid spread of the disease.²⁷ Various research facilities in China, Hong Kong, Australia, Singapore, the United States, Germany, Canada, and the UK have since reinforced their efforts to invent appropriate vaccines to treat the novel virus. Among them are the Chinese CDC, Johnson and Johnson Medical Device Company, Moderna Therapeutics, Inovio Pharmaceuticals, the International Vaccine Center, and CureVac AG Biopharmaceutical Company.^{28,29}

On the frontier of treatments, while there are no definite antiviral therapies and vaccines for this infection at the moment, it is very important that global efforts are harnessed to keep the general public calm and quench unnecessary fears. While health facilities across the globe need major improvements to contain and treat infections, it is recommended that national authorities inform their citizens about the facts regarding the outbreak and advise them on what to do to stay away from the disease. As standard measures, WHO recommends the general public to frequently wash their hands using alcohol-based soap and water. Consumption of raw or undercooked animals should also be avoided. Additionally, persons experiencing symptoms of fever and cough, and have difficulties breathing are advised to seek medical attention promptly. Finally, individuals are advised to wear masks and cover their mouth and nose when coughing or sneezing in public.³⁰ With all these measures in place, the transmission of 2019-nCoV is expected to reduce drastically while scientists still race to find a permanent cure for this deadly disease.

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