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countries or regions (appendix). With the exception of Australia, Hong Kong, and Italy, the CSSE at Johns Hopkins University has reported newly infected countries ahead of WHO, with Hong Kong and Italy reported within hours of the corresponding WHO situation report.

Given the popularity and impact of the dashboard to date, we plan to continue hosting and managing the tool throughout the entirety of the COVID-19 outbreak and to build out its capabilities to establish a standing tool to monitor and report on future outbreaks. We believe our efforts are crucial to help inform modelling efforts and control measures during the earliest stages of the outbreak.

We declare no competing interests.

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- 1 WHO. WHO statement regarding cluster of pneumonia cases in Wuhan, China. Jan 9, 2020. <https://www.who.int/china/news/detail/09-01-2020-who-statement-regarding-cluster-of-pneumonia-cases-in-wuhan-china> (accessed Feb 11, 2020).
- 2 WHO. Coronavirus disease 2019 (COVID-19) situation reports. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports> (accessed Feb 17, 2020).
- 3 Chinese Center for Disease Control and Prevention. Tracking the epidemic. <http://weekly.chinacdc.cn/news/TrackingtheEpidemic.htm> (accessed Feb 11, 2020).

The availability of accurate and robust epidemiological, clinical, and laboratory data early in an epidemic is important to guide public health decision-making.<sup>1</sup> Consistent recording of epidemiological information is important to understand transmissibility, risk of geographic spread, routes of transmission, and risk factors for infection, and to provide the baseline for epidemiological modelling that can inform planning of response and containment efforts to reduce the burden of disease. Furthermore, detailed information provided in real time is crucial for deciding where to prioritise surveillance.

Line list data are rarely available openly in real time during outbreaks. However, they enable a multiplicity of analyses to be undertaken by different groups, using various models and assumptions, which can help build consensus on robust inference. Parallels exist between this and the open sharing of genomic data.<sup>2</sup>

We have built a centralised repository of individual-level information on patients with laboratory-confirmed COVID-19 (in China, confirmed by detection of virus nucleic acid at the City and Provincial Centers for Disease Control and Prevention), including their travel history, location (highest resolution available and corresponding latitude and longitude), symptoms, and reported onset dates, as well as confirmation dates and basic demographics. Information is collated from a variety of sources, including official reports from WHO, Ministries of Health, and Chinese local, provincial, and national health authorities. If additional data are available from reliable online reports, they are included. Data are available openly and are updated on a regular basis (around twice a day).

We hope these data continue to be used to build evidence for planning, modelling, and epidemiological studies to better inform the public, policy makers, and international organisations and funders as to where

and how to improve surveillance, response efforts, and delivery of resources, which are crucial factors in containing the COVID-19 epidemic.

The epidemic is unfolding rapidly and reports are outdated quickly, so it will be necessary to build computational infrastructure that can handle the large expected increase in case reports. Data sharing will be vital to evaluate and maintain accurate reporting of cases during this outbreak.<sup>3</sup>

We declare no competing interests. This work was funded by the Oxford Martin School. A full list of Open COVID-19 Data Curation Group members is provided in the appendix.

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- 1 Morgan O. How decision makers can use quantitative approaches to guide outbreak responses. *Philos Trans R Soc B Biol Sci* 2019; **374**: 20180365.
- 2 Yozwiak NL, Schaffner SF, Sabeti PC. Data sharing: make outbreak research open access. *Nature* 2015; **518**: 477–79.
- 3 Heymann DL. Data sharing and outbreaks: best practice exemplified. *Lancet* 2020; **395**: 469–70.

## A family cluster of SARS-CoV-2 infection involving 11 patients in Nanjing, China

Human infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has become a global health concern.<sup>1,2</sup> Currently, human-to-human transmission of the virus accounts for most infections worldwide.<sup>3</sup> We report a family cluster of SARS-CoV-2 infection involving 11 patients in Nanjing, China.

The detailed timeline of exposure for the 11 confirmed patients is presented in the appendix 2. The index patient travelled to Nanjing on Jan 21, 2020, from Xiaogan (about 70 km from Wuhan), and switched trains in Wuhan. After arriving in Nanjing, she stayed with two of her

For the repository of COVID-19 patient data see <https://tinyurl.com/s6gsq5y>



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For the Chinese translation see  
Online for appendix 1



## Open access epidemiological data from the COVID-19 outbreak

See Online for appendix 2

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Coronavirus disease 2019 (COVID-19) is spreading rapidly across China, and as of Feb 16, 2020, had been reported in 26 countries globally.