

With many therapeutic possibilities and limited time, Jiang says the WHO should provide advice about which treatments to move forward, and which to ditch, as trials progress. And he hopes that research on better, broader therapies will be continued after the outbreak ends. “I worry this will be the same situation as during SARS,” he says,

“where the work starts, then stops.”

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# SCIENTISTS FEAR CORONAVIRUS SPREAD IN VULNERABLE NATIONS

## Concerns are rising about the virus’s potential to circulate undetected in Africa and Asia.

By Smriti Mallapaty

Infections with the new coronavirus have now been detected in 25 countries outside China. But researchers warn that cases might be going undetected in some nations that are considered to be at high risk of an outbreak but are reporting fewer cases than expected, or none at all.

The possibility of unreported cases of the disease, known as COVID-19, is particularly concerning in countries with weaker health-care systems, such as some in southeast Asia and Africa, which could quickly be overwhelmed by a local outbreak, experts say. So far, only one case has been reported in Africa – in a person in Egypt – but some countries there, such as Nigeria, are at particular risk because of their strong business ties to China.

Researchers have been using flight data to create models of the possible spread of the virus around the world. One model identified 30 countries or regions at risk of importing the virus on the basis of the large number of flights from Wuhan, the outbreak’s epicentre, and from other cities in China with many travellers from Wuhan.

Thailand is the country most exposed, according to the study, which was published on 5 February and used flight data from February 2018 (S. Lai *et al.* Preprint at medRxiv <http://doi.org/dmr4>; 2020). Thirty-five people with the infection have been reported there so far, of whom 23 had been in China. But study co-author Shengjie Lai, an epidemiologist at the University of Southampton, UK, says the model estimates that Thailand probably imported 207 cases in the 2 weeks before travel into and out of Wuhan was restricted in late January.

Indonesia has not reported a single case so far, and yet the country is a popular destination

for Chinese tourists. Lai says it might have imported as many as 29 cases. Several other countries, including Malaysia, Vietnam, Cambodia and Australia, have also reported fewer cases than the model predicts, he says.

Although it’s possible that there have truly been no cases in Indonesia, infected people might have recovered before they were detected, says epidemiologist Andrew Tatem, a co-author of the study also at the University of Southampton. Undetected cases might also be spreading under the radar, he says.

Despite the predictions, Amin Soebandrio, an infectious-disease scientist and chair of the Eijkman Institute for Molecular Biology in Jakarta, says Indonesia has the capacity to detect the virus in people if it arrives.

But some countries in southeast Asia have limited numbers of health-care workers,



The coronavirus responsible for COVID-19.

hospital beds, support staff and ventilators, and would struggle to respond to a surge in cases of the virus, says Richard Coker, a retired physician based in Bangkok.

Tedros Adhanom Ghebreyesus, director-general of the World Health Organization (WHO), said the agency’s decision to declare the outbreak a global health emergency was mainly due to concerns that the virus could spread in countries with weaker health-care systems.

## What about Africa?

For that reason, infectious-disease researchers are also worried about the virus spreading among people in Africa. A large number of Chinese labourers work in Africa, and their travel between China and Africa is a possible route for transmission, says Marc Lipsitch, an epidemiologist at the Harvard T.H. Chan School of Public Health in Boston, Massachusetts.

Another model found that Egypt, Algeria and South Africa are the countries in Africa that are most at risk of the virus spreading. The analysis, published on 7 February, examined flights to Africa from Chinese cities that had reported infections, but excluded cities in Hubei province, where Wuhan is located, because of the lockdown that has restricted travel from many cities there since late January (M. Gilbert *et al.* Preprint at medRxiv <http://doi.org/dmr5>; 2020).

But these three countries also have the capacity to respond effectively to an outbreak, says Vittoria Colizza, who models infectious diseases at the Pierre Louis Institute of Epidemiology and Public Health in Paris and is a co-author of the Africa study.

Colizza is most concerned about seven African nations that have a moderate risk of importing the virus, but whose weak health-care systems, low economic status or unstable political situation make them highly vulnerable. These are Nigeria, Ethiopia, Sudan, Angola, Tanzania, Ghana and Kenya.

Until two weeks ago, many African nations did not have laboratories that could diagnose COVID-19, and samples had to be tested abroad. But the situation is changing rapidly, says Colizza. Africa has gone from having only two labs with the capacity to confirm the virus to having at least eight, according to the WHO.

Three of the newly added labs are in Nigeria, says Chikwe Ihekweazu, director-general of the Nigeria Centre for Disease Control in Abuja.

Ihekweazu says Nigeria’s size, the volume of travellers it receives and its vibrant economy already make it vulnerable to importing an infectious disease, and that the country’s strong business ties with China pose a further risk.

Nigeria has ramped up screening of travellers from China. Ihekweazu says the worst-case scenario for the country would be if an infected person goes undetected and begins to infect others. “That is really what keeps me up at night,” he says.