Epidemiology of Covid-19

TO THE EDITOR: With regard to the Perspective article by Lipsitch et al. (published Feb. 19 at NEJM.org), cases of Covid-19 (the illness caused by SARS-CoV-2 infection) with no epidemiologic link to travel to China or known cases outside China have caused international concern about undetected introduction of the virus from subclinical infection. It is also possible that local zoonotic spillover of this coronavirus from an intermediate animal reservoir or reservoirs into human populations might have occurred, particularly in Southeast Asia.

For example, coronaviruses that are phylogenetically close to SARS-CoV-2 have been detected in pangolins (scaly anteaters), especially in Malayan pangolins (also known as Sunda pangolins) that are obtained in antismuggling operations in Guangdong Province and the Guangxi Zhuang Autonomous Region in China. This species, which is located throughout Southeast Asia, is thus currently considered to be a potential intermediate host of SARS-CoV-2. In addition, a recent phyloepidemiologic analysis suggested that the Covid-19 outbreak did not arise from a “Big Bang”–like event at Huanan Seafood Wholesale Market in Wuhan, China, but rather it may have originated elsewhere and probably involved more than one zoonotic spillover. Finally, a person with a confirmed case of Covid-19 in Shanghai was probably infected by consuming bush meat (i.e., wild animals hunted for food) while traveling in Guangdong Province in China.

Taken together, the possibility of novel coronavirus spillover to humans in Southeast Asia cannot be ruled out. Surveillance to detect coronaviruses in pangolins is needed to address this concern.

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THE AUTHORS REPLY: Zhang hypothesizes that Covid-19 cases continue to occur from repeated zoonotic spillover events from pangolins to humans. There are several ways to distinguish repeated spillover events from human-to-human transmission. Genomic sequencing of animal and human isolates as well as observational studies, case–control studies, and modeling can distinguish the number of independent introductions from animals to humans. Nevertheless, we agree that surveillance to detect spillover events is important.

Since our Perspective article about Covid-19 was published, much has been learned about case fatality rates, transmission, asymptomatic cases, and risk factors for severe disease and death. We have seen marked declines in transmission in some areas. Now is the time to conduct community household serosurveys to answer two important outstanding questions: How many infec-
tions are out there, going undetected? And what level of population-wide immunity is being attained? The answers to those questions have worldwide implications.

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