
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

data to inform policy in a wider range of countries is clear, while improving lifestyle choices and modifying their social and commercial determinants remain a challenge.

We declare no competing interests.

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# What are the risks of COVID-19 infection in pregnant women?

Soe Zeya Tun/Reuters

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Since December, 2019, the outbreak of the 2019 novel coronavirus disease (COVID-19) infection has become a major epidemic threat in China. As of Feb 11, 2020, the cumulative number of confirmed cases in mainland China has reached 38 800, with 4740 (12·2%) cured cases and 1113 (2·9%) deaths; additionally, there have been 16 067 suspected cases so far.[1] All 31 provinces in mainland China have now adopted the first-level response to major public health emergencies. The National Health Commission of China has published a series of guidelines on the prevention, diagnosis, and treatment of COVID-19 pneumonia, based on growing evidence of the pathogens responsible for COVID-19 infection, as well as the epidemiological characteristics, clinical features, and the most effective treatments.[2–4] The central government and some provincial governments have provided food and medical supplies and dispatched expert groups and medical teams to manage and control the outbreak response in the hardest-hit areas (Wuhan and neighbouring cities in Hubei province).

As the COVID-19 outbreak unfolds, prevention and control of COVID-19 infection among pregnant women and the potential risk of vertical transmission have become a major concern. More evidence is needed to develop effective preventive and clinical strategies. The latest research by Huijun Chen and colleagues[5] reported in *The Lancet* provides some insight into the clinical characteristics, pregnancy outcomes, and vertical transmission potential of COVID-19 infection in pregnant women. Although the study analysed only a small number of cases (nine women with confirmed COVID-19 pneumonia), under such emergent circumstances these findings are valuable for preventive and clinical practice in China and elsewhere. Although neonatal nasopharyngeal swab samples have been collected in some hospitals across China, this study also collected and tested amniotic fluid, cord blood, and breastmilk samples for the presence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), thus allowing a more detailed assessment of the vertical transmission potential of COVID-19 infection.

SARS-CoV-2 is a new strain of coronaviruses that are pathogenic to humans. Another two notable strains are SARS-CoV and the Middle East respiratory syndrome (MERS) coronavirus (MERS-CoV). A study done by Roujian Lu and colleagues[6] found that although SARS-CoV-2 is genetically closer to two bat-derived SARS-like coronaviruses, bat-SL-CoVZC45 and bat-SL-CoVZXC21 (with about 88% genome sequence identity), than to SARS-CoV-1 (about 79% identity) and MERS-CoV (about 50% identity), homology modelling has revealed that SARS-CoV-2 has a similar receptor-binding domain structure to that of SARS-CoV-1, which suggests that COVID-19 infection might have a similar pathogenesis to SARS-CoV-1 infection.[6–8] Thus, the risk of vertical transmission of COVID-19 might be as low as that of SARS-CoV-1. The present study by Chen and

colleagues did not find any evidence of the presence of SARS-CoV-2 viral particles in the products of conception or in neonates, in accordance with the findings of a previous study on SARS-CoV-1 done by Wong and colleagues.[9] Two neonatal cases of COVID-19 infection have been confirmed so far,[10] with one case confirmed at 17 days after birth and having a close contact history with two confirmed cases (the baby's mother and maternity matron) and the other case confirmed at 36 h after birth and for whom the possibility of close contact history cannot be excluded. However, no reliable evidence is as yet available to support the possibility of vertical transmission of COVID-19 infection from the mother to the baby.

Previous studies have shown that SARS during pregnancy is associated with a high incidence of adverse maternal and neonatal complications, such as spontaneous miscarriage, preterm delivery, intrauterine growth restriction, application of endotracheal intubation, admission to the intensive care unit, renal failure, and disseminated intravascular coagulopathy.[9,11] However, pregnant women with COVID-19 infection in the present study had fewer adverse maternal and neonatal complications and outcomes than would be anticipated for those with SARS-CoV-1 infection. Although a small number of cases was analysed and the findings should be interpreted with caution, the findings are mostly consistent with the clinical analysis done by Zhu and colleagues[12] of ten neonates born to mothers with COVID-19 pneumonia. The clinical characteristics reported in pregnant women with confirmed COVID-19 infection are similar to those reported for non-pregnant adults with confirmed COVID-19 infection in the general population and are indicative of a relatively optimistic clinical course and outcomes for COVID-19 infection compared with SARS-CoV-1 infection.[13,14]

Nonetheless, because of the small number of cases analysed and the short duration of the study period, more follow-up studies should be done to further evaluate the safety and health of pregnant women and newborn babies who develop COVID-19 infection. As discussed in the study, pregnant women are susceptible to respiratory pathogens and to development of severe pneumonia, which possibly makes them more susceptible to COVID-19 infection than the general population, especially if they have chronic diseases or maternal complications. Therefore, pregnant women and newborn babies should be considered key at-risk populations in strategies focusing on prevention and management of COVID-19 infection. Based on evidence from the latest studies and expert recommendations, as well as previous experiences from the prevention and control of SARS, the National Health Commission of China launched a new notice on Feb 8, 2020,[15] which proposed strengthening health counselling, screening, and follow-ups for pregnant women, reinforcing visit time and procedures in obstetric clinics and units with specialised infection control preparations and protective clothing, and emphasised that neonates of pregnant women with suspected or confirmed COVID-19 infection should be isolated in a designated unit for at least 14 days after birth and should not be breastfed, to avoid close contact with the mother while she has suspected or confirmed COVID-19 infection.

We need to further strengthen our capacity to deal with emergent infectious disease outbreaks, through laws and regulations to prevent and control the spread of infectious diseases and to avoid outbreak clusters in families, communities, and other public places, and to do so with transparency and solidarity. Timely reporting and disclosure of emergent infectious diseases is also important to avoid delayed responses. Infection control and management procedures in hospitals and other places with several confirmed cases isolated together should also be maintained, and specialised clothing and equipment provided to protect medical professionals and other health workers from occupational exposure to COVID-19 infection.

The Chinese version of this Comment is provided in the appendix. I declare no competing interests.

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# Scientists are sprinting to outpace the novel coronavirus


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For the Arabic translation see **Online** for appendix 1

For the Chinese translation see **Online** for appendix 2

For the French translation see **Online** for appendix 3

For the Russian translation see **Online** for appendix 4

For the Spanish translation see **Online** for appendix 5


The number of people with novel coronavirus disease 2019 (COVID-19) has risen above 75 000 globally, over 99% of whom are in China, with more than 900 cases in 25 other countries as of Feb 20, 2020.[1,2] Science, however, is stepping up to the challenge. Consider the example of Africa's efforts to scale up its capacity to detect any cases of infection.

On Feb 3, 2020, the only African countries with laboratories that could test for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) were South Africa and Senegal. This scarce capacity was a major concern for a continent bracing for possible infections. Just a fortnight later, WHO had sent testing kits to 27 countries on the continent, which are already being used.[3] By the end of this week, the number of countries able to detect COVID-19 is expected to have risen to 40. The Africa Centres for Disease Control and Prevention has led training for these countries in Senegal, with further sessions scheduled for the week of Feb 24, 2020, in South Africa.[3]

Seyllou/Afp/Getty Images

The importance of the ability to test for SARS-CoV-2 in poorer countries cannot be overstated. It gives them the best chance of containment before the virus can spread and devastate weak health systems. Reliable diagnostics are crucial in the response to the outbreak.

Fortunately, scientists around the world are working at breakneck speed to figure out how to detect, treat, and control the new coronavirus. On Feb 10–12, 2020, WHO brought almost 400 scientists together for a research and innovation forum on the new coronavirus.[4] The meeting covered the topics of diagnostics, vaccines, and therapeutics for COVID-19, alongside questions of how to best integrate social science into the response and protection of health-care workers from infection. The forum generated a research roadmap, due to be published at the end of February, 2020, to develop tools to help control the outbreak, reduce deaths, and minimise damage to economies and the social fabric of communities.

The roadmap is intended to enable scientists, researchers, and funders to coordinate and align