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## COVID-19: preparing for superspreader potential among Umrah pilgrims to Saudi Arabia

The ongoing coronavirus disease 2019 (COVID-19) outbreak is a Public Health Emergency of International Concern (PHEIC), and the emergence of new epicentres of spread, such as South Korea and Iran, besides Wuhan, China, should draw attention to potential superspreader events.<sup>1</sup> Of concern is the continuous Umrah pilgrimage to Saudi Arabia by Muslim pilgrims from more than 180 countries. In addition to the non-pilgrim air traffic (39 million people in 2018), Saudi Arabia received 7.5 million Umrah visa holders in 2019 (appendix).

Of relevance to superspreader events in the ongoing COVID-19 outbreak is that the timing of the outbreak, originating in Wuhan, a megacity of 11 million, coincided with the world's largest mass population movement, the Spring Festival. Known COVID-19 features of concern during superspreader events include: (1) the number of cases of COVID-19-related pneumonia have been doubling approximately every 7.4 days; (2) the basic reproduction rate is 2.2; (3) exposure to an animal source was not required for transmission, indicating human-to-human transmission; (4) the median age of infected people is 61 years; and (5) asymptomatic infections can be a source of infection.<sup>2,3</sup>

Cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection have already been reported in the Arabian Peninsula and Middle Eastern region (United Arab Emirates, Egypt, Iran, Lebanon, Bahrain, Kuwait, Oman, Afghanistan, Iraq).<sup>1,4,5</sup> SARS-CoV-2 may be seeded in and transmitted out of Saudi Arabia by Umrah visitors and non-Umrah visitors.<sup>6</sup> Foreign guest workers and residents in Saudi Arabia (37% of the population), citizens of visa-free

countries such as the Gulf Cooperation Council countries, and Saudi citizens also participate in Umrah. China is among the 50 countries included in the e-visa programme introduced by Saudi Arabia. Umrah visitors spend on average 10 days in the holy sites, and pilgrims mingle at the holy sites without social distancing. 43% of pilgrims are 56 years of age or older, two-thirds of pilgrims are from countries with suboptimal disease surveillance systems or travel health counselling services, and 50% have pre-existing chronic disease.<sup>7</sup>

Respiratory infections are the most common illness among pilgrims (reported by 40–90% of pilgrims), and the lack of social distancing among pilgrims as they engage in religious rituals amplifies their risk of acquiring and transmitting respiratory diseases.<sup>6</sup> Face mask use was low among pilgrims during the 2009 H1N1 influenza A pandemic and Middle East respiratory syndrome coronavirus (MERS-CoV) outbreak, which coincided with the Hajj (8.4% and 0.02%, respectively).<sup>8</sup> Exposure to MERS-CoV among Saudi Arabian citizens might be high, but whether there are potential interactions between MERS-CoV and SARS-CoV-2 is unknown. Finally, given that about a third of Umrah participants come from the African region, Umrah might well be the single event that precipitates a spread to that region.

Umrah visitors to Saudi Arabia do not normally receive structured health protection messages in their home countries. Hand washing and respiratory hygiene are part of the rituals and mandatory five times a day, yet the overcrowding and other risk factors may outweigh the benefits. Restrictions on performing Umrah is a highly sensitive geopolitical proposition that requires further vetting, especially when multiple countries are affected.

Home countries of Umrah pilgrims need to sensitise the pilgrims on the need for vigil and personal protection. Voluntary postponement

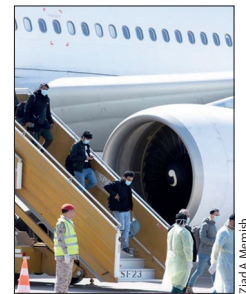
of Umrah visits might be proposed for elderly pilgrims and pilgrims with chronic and underlying conditions until the COVID-19 epidemic is under control. Adequate quarantine infrastructure should be available. Given Saudi Arabia's track record of hosting pilgrims amidst the 2009 H1N1 pandemic, a declared PHEIC, the country could quickly activate advisories, infrastructure, and provisions for pilgrims.<sup>6,7</sup> We do not need to wait for the first case to emerge in Saudi Arabia's holy sites. The time for preparedness is now.

We declare no competing interests.

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Evacuated students from China arriving at Riyadh Airport

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