The Hajj

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Mass gatherings can be hazardous. Hajj, the fifth pillar of Islam, is the largest annual mass gathering of humans, with more than 2 million people wearing specified garments, following prescribed religious rituals and fulfilling their religious obligations. There is a risk of communicable disease introduction, rapid amplification and, as pilgrims travel home, the potential spread into countries transited, communities and home countries. In previous centuries, Hajj was associated with significant outbreaks of cholera, plague and smallpox.¹ In more recent years, global outbreaks of *Neisseria meningitidis* A and W135 have occurred.²

To mitigate the risk, the Ministry of Health of the Kingdom of Saudi Arabia publishes annual requirements for the vaccination of pilgrims prior to the issue of a pilgrim's visa. These include seasonal trivalent influenza vaccine. However, in April 2009 H1N1pdm09 was identified. Hajj was in the last week of November. As the pandemic spread, the media speculated about cancellation.

Advice from the Ministry of Health was that pilgrims older than 65, younger than 12, pregnant, extremely obese or with certain chronic illnesses defer. Vaccination against both seasonal influenza and pandemic influenza for pilgrims coming from countries where these vaccines were available was required.³ Chinese vaccines against H1N1pdm09 were available in early September, and in well-resourced countries other vaccines were rapidly deployed. But for most pilgrims, vaccine was not accessible. Most, including those from Iran, were vaccinated against seasonal influenza and not H1N1pdm09.

Yavarian and colleagues provide an overview of the epidemiology of pandemic influenza in Iran in 2009.⁴ Initially detected in a traveller at the end of June, a moderate first wave occurred in the late summer, July–September. A second wave began in October peaking in November. Of more than 40 000 suspected cases, 12.9% were laboratory confirmed. This increased to 33.3% in October and 34.8% in November. During these months, schools were closed in parts of Iran due to absenteeism. The indications are of significant spread of influenza immediately prior to Hajj. The results of a serosurvey

would have provided valuable information on the spread of disease but could not have provided timely evidence for vaccination policy for 2009.

How many Iranian pilgrims may have had H1N1pdm09 prior to Hajj remains unknown. Reviewing the point prevalence, Ziyaeyan and colleagues found 1.6% of returning pilgrims, Hajji, positive by PCR.⁵ Other influenza viruses were detected in 2.6% of Hajji. Ziyaeyan *et al.* also present evidence on the incidence of acute respiratory infection defined by cough, sore throat or rhinorrhea or congestion while on pilgrimage. Almost 60% of Hajji had experienced at least one symptom of acute respiratory infection. It seems surprising that pilgrims in 2009, despite enhanced hygiene messages, increased vigilance, and the absence of children and the chronically ill, had a slightly greater than a 1-in-2 chance of experiencing symptoms of an acute respiratory infection. 10% of the sample population experienced the influenza-like-illness (ILI) triad of fever, sore throat and cough.

Moattari and colleagues describe the situation one week later. Hajji with ILI were recruited on arrival at the airport.⁶ All had been vaccinated, but 10.2% had either seasonal or pandemic viruses found by culture or PCR. Difficulties with influenza vaccine effectiveness are well documented, and in this respect both Ziyaeyan and Moattari point out the future role of non-pharmaceutical interventions in protecting pilgrims – hand hygiene and respiratory etiquette. Social distancing is not an option but is mass prophylaxis with neuraminidase inhibitors also off the table? Should pandemic vaccination priorities reflect the role that mass gatherings potentially play in disease spread? And although the first pandemic of the 21st century was severe in some, mild in most and moderate overall, would a more severe disease give rise to considerations of cancellation of Hajj for that year and not just a recommendation to specific groups to defer?

The responsible health authorities may face some interesting questions next time.

References

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