

## Implications of converging conflicts, emergencies, and mass gatherings for global health security



In 2017, 29 countries received UN humanitarian assistance, with coverage reaching 93 million people.<sup>1</sup> In 2014–15, three west African countries experienced Ebola-virus-related emergencies that adversely affected health systems.<sup>2</sup> Man-made and natural emergencies lead to weakening or cessation of disease control efforts and surveillance systems, allowing outbreaks of infectious diseases to go undetected before reaching epidemic thresholds.<sup>3</sup> Ample historical evidence suggests an ecological association between conflicts and diseases; examples include the Roman civil war in 165–189 (the Antonine plague), the Crimean war in 1854–55 (cholera), and World War 2 in 1939–45 (diphtheria).<sup>4</sup>

The consequences of ongoing conflicts and recent emergencies transcend nations and affect public health in all countries. With international travel, diseases with short incubation periods and high infectiousness, such as measles,<sup>5</sup> have the potential to find a niche in marginalised populations worldwide. The emergence of measles in 14 European countries in 2017, and more recently in Venezuela, underscores the fact that although conflict-related disruptions might be unique to developing countries, they create infectious reservoirs that pose a risk to stable and developed health systems. Yemen's cholera outbreak persists amidst the ongoing conflict. Outbreaks of cholera, Ebola, and yellow fever happened in The Democratic Republic of the Congo amidst a long conflict. The post-earthquake epidemic of south Asian cholera in Haiti in 2010–12, which was transmitted by Nepalese UN peacekeepers,<sup>6</sup> is perhaps the most recent reminder that despite advances in all aspects of disease surveillance and prevention services, disease will continue to spread via unsuspected routes of transmission.

Several aspects of conflicts and emergencies are of concern during mass gatherings. First, the UN has recorded more conflicts in the Middle Eastern and African regions than in other regions. These regions also constitute the largest group of countries participating in the Hajj, with a population that amounts to more than 90% of all international pilgrims (table). In 2018, 12 million pilgrims are expected to visit Saudi Arabia

for both Hajj and Umrah.<sup>7</sup> Second, because of the substantial interconnectedness of the affected regions through international air travel, migration, and trade, even countries that do not have conflicts become transit points for potential disease transmission. Third, nearly half of all deaths from infectious diseases affect people in the African region (16 of the 29 countries in humanitarian crisis are home to 93% of pilgrims), making this region a very vulnerable hotspot for emerging diseases. The Asia and Pacific regions (with two of 29 countries in humanitarian crisis) are affected by drug-resistant tuberculosis, cholera, malaria, and emerging strains of avian influenza.<sup>7–9</sup> Finally, from

Pilgrims	
Total number of pilgrims from abroad	1 374 110
Asia	2%
Afghanistan	24 243
Myanmar	3 299
Middle East	4%
Iraq	28 001
Yemen	20 201
Syria	1 724
Palestine	894
Africa	93%
Nigeria	72 498
Sudan	24 470
Niger	22 072
Senegal	9 109
Somalia	7 342
Mali	7 311
Chad	7 056
Libya	5 067
Burkina Faso	4 807
Cameroon	3 607
Mauritania	3 477
Gambia	1 388
Djibouti	902
Burundi	92
Zimbabwe	69
Central Africa	1
Haiti	4
Ukraine	2

Data are % or n. Source: 2015 pilgrim statistics, Ministry of Hajj, Saudi Arabia.

**Table: Hajj mass gathering pilgrims from countries needing UN humanitarian assistance in 2017**

anecdotal evidence of the spread of 1957 influenza to national and international meningococcal meningitis outbreaks and polio during the Hajj, mass gatherings have been linked to infectious disease transmission due to factors such as overcrowding, high numbers of viral influenza-like illness, and the gathering of millions of people in a small geographical area.<sup>7-9</sup>

In view of the disruption of public health systems in conflicted regions and countries, mass gathering events are an opportunity for one-stop sentinel surveillance and public health interventions with rapid tests, storage infrastructure for biological specimens for future investigation, and assessment of measures to stop transmission.<sup>10</sup> This opportunity for multicountry surveillance programmes in a single venue and within a specific timeframe is of particular interest to regions and countries in conflict and to international partners. The 2009 pH1N1 pandemic and the Hajj showed the potential of mass gatherings for disease surveillance and assessment of control measures.<sup>11</sup>

No single intervention can address all aspects of disease transmission during mass gatherings amidst ongoing conflicts, but a combination of efforts by host and home countries of visitors and pilgrims can help prepare for outbreaks. Available tools include education and awareness-generating programmes provided before departure and during travel to mass gatherings as well as during predeparture health visits, mandatory travel vaccinations, visa restrictions (as appropriate), arrival and departure health checks at points of entry or departure, prophylaxis for known diseases (such as for polio provided at Jeddah airport during the Hajj for pilgrims arriving from countries with ongoing transmission, and temperature and symptom screening for Ebola virus during outbreaks), surveillance using live electronic reporting, and easily accessible care and prevention activities at venues of mass gathering.<sup>7,10,11</sup> Support and coordination with some international entities, including WHO, the International Air Transport Association, and transportation companies, will help improve results with these measures. Adequate financing might not

be available from one country alone, and collective contribution would be necessary.<sup>12</sup> No single entity can fully be responsible for the implementation of these measures, and collaboration and coordination are key to success.

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We declare no competing interests.

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