

Current major event

Closing the knowledge gaps on MERS-CoV

In recent time, WHO conducted a high-level mission to Saudi Arabia on Middle East respiratory syndrome coronavirus (MERS-CoV) from 11 to 14 January 2016. One of the objectives of the mission was to identify main areas of public health research to better address the remaining knowledge gaps on MERS which is continuing to haunt the global scientific communities since the detection of the virus in 2012.

Editorial note

Since its emergence in 2012, cases of Middle East respiratory syndrome (MERS) continue to occur in countries of the Eastern Mediterranean Region signifying that the global threat of MERS has not yet subsided. Last year, the outbreak in South Korea was a strong reminder that MERS remained an international health threat and could cause severe disruption to health, economic and social services if health systems remain unprepared.

Despite its low levels of transmission, the virus presents an uncertain future as a number of critical knowledge gaps on the source and route of transmission have hindered the global response to this emerging infection.

What have we learnt so far on MERS-Cov is that it is a zoonotic virus and the evidence accumulated, so far, suggests that human infections have been associated with either direct or in-direct contact with animals, especially camels. We have also known that MERS-Cov is widespread in camel populations in the Arabian Peninsula and some African countries such as Egypt, Ethiopia, Kenya, Nigeria, Tunisia and Sudan. However, these findings do not explain whether the virus was circulating in the dromedary camels of these countries before the first human infection was detected in 2012.

From the public health perspective, we have also learnt that the risk factors for nosocomial outbreaks are overcrowding, lack of proper assessment and triaging of suspected patients, uncontrolled patient

Some important knowledge gaps on MERS-CoV

- What other non-human source acts as a conduit for infection in humans?
- Do intermediary species play a role in transmission?
- What specific behaviours may result in human infection from non-human sources?
- What role do silent/asymptomatic cases play in transmission of infections in humans?
- What is the extent of infection in the community and extent of person-to-person transmission in the community?
- What is the immune response and duration of infectiousness?
- Why do we see more secondary cases in healthcare settings than in households?
- What are the exposure risk factors for healthcare workers?
- What is the virus dynamics between animals and humans?
- What are the drivers of transmission of virus in camels?
- What role does the environment play in transmission?
- Are there any seasonal trend of the disease?

Some positive observations of the WHO Mission

- Accumulating knowledge and learning lessons to control hospital outbreaks
- Improved collaboration between the human and animal health sectors;
- Establishing an electronic surveillance system for MERS and monitoring the situation in real-time
- Establishing a mechanism to support and fund priority health research on MERS to address key knowledge gaps

movement, absence of patient cohorting and poor compliance with infection control practices by health-care workers.

The available information suggests that the mystery of MERS has not yet fully unfolded. Like any other emerging infection, it has the potential to turn into an explosive outbreak with rapid dispersion of the virus into the susceptible populations. A substantial amount of research on MERS has been carried out since its discovery. However, a number of knowledge gaps still remain and filling these is critical both to advancing our understanding of MERS-Cov infection and, more importantly, to improving the effectiveness of the global response to the virus. Some of these gaps (*please see above*) have been identified during the recent mission of WHO.

Like all coronavirus, MERS-Cov is prone to mutations and may acquire an enhanced ability to become more easily transmissible. Considering the current uncertainties surrounding the virus and its presumed capability to cause a global health emergency, conducting such research to close the currently existing knowledge gaps is vital and of urgent priority. Only then, we can perhaps avert another global health emergency.

Update on outbreaks

in the Eastern Mediterranean Region

MERS-CoV in Saudi Arabia; Undiagnosed viral haemorrhagic fever in Sudan

Current public health events of international concern [cumulative N° of cases (deaths), CFR %]

Avian Influenza : 2006-2016

Egypt (A/H5N1)	[346 (117), 33.8%]
Egypt (A/H9N2)	[3 (0)]

MERS-CoV: 2012-2016

Saudi Arabia	[1277 (549), 42.9%]
Jordan	[39 (12), 31%]
Oman	[7 (3), 42.8%]
UAE	[78 (11), 14.1%]
Kuwait	[3 (1), 33.3%]
Republic of Korea	[186 (36), 19.3%]
Qatar	[14 (5), 35%]
Iran	[6 (2), 33.3%]

Lassa fever: 2015-2016

Nigeria	[159(82), 51.5%]
Benin	[71(23),32.3%

Ebola Virus Disease: 2014-2016

Guinea	[3804 (2536),66.6%]
Liberia	[10675 (4809),45%]
Sierra Leone	[14124 (3956),28%]

Viral Haemorrhagic Fever (of unknown aetiology)

Sudan	[535 (99),18.5%]
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Wild poliovirus: 2014-2016

Pakistan	[360 (0)]
Afghanistan	[47(0)]