

Current major event

MERS-CoV: Need to search for unknown answers

The spread of Middle East respiratory syndrome coronavirus (MERS-CoV) to South Korea and China is an important signal for increased vigilance in global health security. Yet, nearly four years have passed since the first case of MERS-CoV made headline worldwide, a number of key research and knowledge gaps remain which is a major impediment to global efforts to effectively contain the spread and transmission of this novel respiratory virus.

Editorial note

Nearly four years after the first recognized human cases of MERS-CoV emerged in the Eastern Mediterranean Region (EMR) of WHO, a rapidly evolving and new cluster of 184 cases in Republic of Korea-including 3 or 4 generation of transmission and 33 deaths as of 3 July 2015, it became imperative that we take a stock of four progress to date in containing and understanding the transmission patterns of MERS-CoV.

Sadly, we have little information to date, about the epidemiology, risk factors, transmission dynamics and treatment options for MERS-CoV. Learning lessons from the previous emerging infectious disease outbreaks, it is apparent that a coordinated global response that included an integrated understanding of virologic characteristics, host response, epidemiology and the effect of treatment rests on concerted and comprehensive research efforts. Unfortunately, the scientific community is far behind in understanding many unknowns where it should be.

In a recent international scientific meeting on MERS-CoV held in Cairo on 05-06 May 2015, a number of knowledge and information gaps were identified (*Please see above*) which are important for effective public health response to the outbreak caused by MERS-CoV at the global level. Although a wealth of information has been accumulated at the global level on the role of Camels in the transmission chain of human infection, it is still not clear, what remains the ex-

MERS-CoV: Current knowledge gaps

Knowledge gaps	Research question	Public health importance
Risk factors for transmission of infection in humans	What non-human source acts as a conduit for infection in humans? What specific behaviours may result in human infection from non-human sources	Useful to identify exact route and mode of transmission in human beings as well as specific behaviours that result in human infection.
Risk factors and transmissibility of laboratory-positive asymptomatic cases	What role do silent/asymptomatic cases play in transmission of infections in humans?	Useful to understand the extent of sub-clinical infection and appropriate isolation measures
Risk factors for transmission in healthcare settings	What are the exposure risk factors for healthcare workers?	Useful to know what specific breach in infection control practices may put the HCWs at highest risk of illness?

Countries so far reported cases of MERS-CoV

- WHO Africa region:** Algeria
- WHO Eastern Mediterranean Region:** Egypt, Jordan, Iran, Lebanon, Kuwait, Oman, Qatar, Tunisia, Saudi Arabia, United Arab Emirates, Yemen
- WHO Europe region:** Austria, France, Germany, Greece, Italy, Netherlands, Turkey, United Kingdom
- WHO Western Pacific region:** China, Republic of Korea, Malaysia, Philippines
- WHO America:** United States America

act route and mode transmission of this virus from Camels to humans and what specific risky behaviours result in human information. The answer to these research questions are critical for communicating risk to the susceptible populations and preventing transmission at the communities.

One another important research gaps is to identify the extent of sub-clinical infection and the role of silent/asymptomatic cases in transmission of infection in humans. Findings an answer to this “unknown” has important public health implication for revising or updating the current isolation and quarantine procedures and infection prevention and control measures in general. Finally, it is important to acknowledge that despite a number of nosocomial outbreaks seen in the recent past, we do not have adequate knowledge on exposure risk factors and what specific breach in infection control practices and measure put the healthcare workers and other at high risk of illness.

Understanding these “unknowns” remain the most important priority today for a comprehensive global response to this outbreak and secure global health.

Update on outbreaks

in the Eastern Mediterranean Region

MERS-CoV in Saudi Arabia, Qatar, UAE

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

Avian Influenza : 2006-2015

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

MERS-CoV: 2012-2015

Saudi Arabia	[1035 (458), 44.2%]
Jordan	[12 (6), 50%]
Oman	[6 (3), 50%]
UAE	[75 (10), 13.3%]
Kuwait	[3 (1), 33.3%]
Tunisia	[3 (1), 33.3%]
Qatar	[12 (4), 33.3%]
Yemen	[1 (1), 100%]
Egypt	[1 (0), 0%]
Lebanon	[1 (0), 0%]
Iran	[6 (2), 33.3%]

Ebola Virus Disease: 2014-2015

Guinea	[3748(2499),66.6%]
Liberia	[10670 (4807),45%]
Sierra Leone	[13155 (3940),30%]
UK	[1(0)]
Nigeria	[20 (8),40%]
Senegal	[1(0)]
Spain	[1(0)]
Italy	[1 (0)]
USA	[4(1),25%]
Mali	[8(6),75%]

Wild poliovirus: 2014-2015

Pakistan	[325 (0)]
Afghanistan	[29(0)]