

# Engaging the international community during the 2015 Middle East respiratory syndrome outbreak in the Republic of Korea

Minwon Lee,<sup>a</sup> Hoohee Nam,<sup>a</sup> Sun-Gyu Lee,<sup>a</sup> Ok Park,<sup>b</sup> Youngmee Jee<sup>b</sup> and Kidong Park<sup>c</sup>

Correspondence to Kidong Park (email: parkk@wpro.who.int).

The 2015 Middle East respiratory syndrome (MERS) outbreak in the Republic of Korea, which started with an imported case<sup>1</sup> and spread throughout the country with a total of 186 cases,<sup>2</sup> revealed the vulnerabilities of the health-care system of the country. The situation was compounded by the unique health-care settings in the Republic of Korea, including crowded emergency departments and large numbers of hospital visitors seeking care at multiple hospitals.<sup>3</sup> To assist with the outbreak response, the Ministry of Health and Welfare of the Republic of Korea hosted several international joint missions that provided valuable information and recommendations for MERS control and prevention of future outbreaks. This report briefly summarizes the missions' outcomes and discusses their positive impacts.

## THE MISSIONS

The Republic of Korea–World Health Organization (WHO) Joint Mission on MERS aimed to provide technical recommendations on outbreak response measures; it was conducted between 9 and 13 June 2015.<sup>4</sup> The mission team was composed of 16 disease outbreak experts. On 16 June, the ninth International Health Regulation (IHR) Emergency Committee Meeting regarding Middle East respiratory syndrome coronavirus (MERS-CoV) was convened by teleconference.<sup>5</sup> On 19 June, the Director-General of WHO and the WHO Regional Director for the Western Pacific visited the Republic of Korea to provide recommendations to the leaders of the country.<sup>6</sup> Experts from Saudi Arabia also visited the Republic of Korea from 12 to 18 June to share their

MERS experience. The Republic of Korea invited experts from the United States Centers for Disease Control and Prevention (US CDC) for technical cooperation on MERS during the period 21 June to 1 July. The Republic of Korea also invited experts from WHO and the United States of America during the period 23 to 26 June to assist with recommendations for communicable disease preparedness and response system reforms.

## RESULTS

The Republic of Korea–WHO Joint Mission provided updates and assessments on the 2015 MERS outbreak. Technical recommendations on outbreak control measures were provided, including: (1) infection prevention and control measures should immediately be strengthened at all health-care facilities across the country; (2) close contacts of MERS cases should not travel during the period when they are being monitored for symptom development; (3) implementation of basic public health measures by all health authorities should be continued; (4) risk communications should be strengthened to increase domestic and international confidence and trust; and (5) selected hospitals should be designated for safe triage and assessment of suspected MERS cases.<sup>3</sup>

Based on the results of the Republic of Korea–WHO Joint Mission, the IHR Emergency Committee concluded that this MERS outbreak in the Republic of Korea did not constitute a Public Health Emergency of International Concern.<sup>5</sup> WHO leaders provided recommendations to Republic of Korea government officials; WHO also

<sup>a</sup> Division of International Cooperation, Ministry of Health and Welfare, Sejong, Republic of Korea.

<sup>b</sup> International Cooperation Task Force on MERS outbreak response, Korea Centers for Disease Control and Prevention, Chungcheongbuk-do, Republic of Korea.

<sup>c</sup> Country Support Unit, World Health Organization Regional Office for the Western Pacific, Manila, Philippines.

Submitted: 13 October 2015; Published: 1 February 2016

doi: 10.5365/wpsar.2015.6.4.003

announced its risk assessment results for this MERS outbreak and gave advice to the general public via a press conference.

The experts from Saudi Arabia shared MERS patient care experience with experts of the Republic of Korea. Epidemiological characteristics of MERS cases between the two countries were also compared. The experts concluded that the adjusted case fatality ratio (adjusted by secondary infection and co-morbidity) of MERS were similar for the two countries (also similar to the results of a previous study<sup>7</sup>). The Saudi Arabian experts also confirmed that MERS is transmitted mostly in droplets, reassuring airborne infections would be extremely rare.

Experts from the US CDC technical cooperation team conducted a comprehensive review of the epidemiological and clinical responses to the MERS cases. They also visited four hospitals to observe the triage system for suspected MERS cases. Infection prevention and control practices at emergency departments and isolation treatment units were also reviewed. The experts concluded that the Republic of Korea had done an extremely thorough and high-quality epidemiological investigation and contact-tracing.

The WHO and United States of America experts provided advice on strengthening the public health system and on establishing clear leadership for outbreak control and risk management. They also commended the strengthened response measures across all sectors of the government despite the limited early response efforts.

## DISCUSSION

The information and advice provided by the joint missions helped the Republic of Korea to set clear directions and guidelines for the MERS outbreak response. The Republic of Korea government launched measures to reform their national infection prevention and control system and later revised it to strengthen their communicable disease outbreak response system.<sup>8</sup>

Based on the recommendations from the Republic of Korea-WHO Joint Mission, the Ministry of Health and Welfare reacted immediately by creating the MERS portal website<sup>9</sup> and multi-language, toll-free telephone hotline services for timely disease information sharing and effective risk communications.<sup>10</sup> These actions

may have eased the mounting fear about MERS while restoring the public's trust in the local government's response measures. Using Google Trends data as a proxy for reflecting the level of concern in the public towards this MERS outbreak, we found Internet searches for MERS peaked during the week of the Republic of Korea-WHO Joint Mission and decreased substantially thereafter.<sup>11</sup>

These joint missions also fostered further scientific cooperation on MERS. The Saudi Arabian experts provided an opportunity to better understand the MERS coronavirus through sharing patient care experience. Joint research opportunities on sero-epidemiology for this outbreak were explored after the US CDC team visit. The Republic of Korea and WHO also jointly organized the 2015 International Symposium on MERS to share experience and new knowledge from recent MERS outbreaks and to discuss how to strengthen public health systems in response to future MERS outbreaks and other threats.<sup>12</sup>

Several limitations of the joint missions were noted, most related to the timing. The Republic of Korea-WHO Joint Mission and the Saudi Arabia mission occurred during the peak of the outbreak. This prevented a more comprehensive assessment with all relevant stakeholders as efforts were more focused on outbreak response at that time. The short duration of each mission was also an impediment for more in-depth situation analysis and review.

Engaging the international community allows the affected country to seek advice from world-class experts and also sends a strong message that local government is committed to sharing information and working together with the international community. Technical cooperation with international partners can produce useful outcomes for improving the communicable disease preparedness and response system. It also provides an opportunity to review the situation with external inputs from unbiased perspectives. Information sharing through collaborative activities helps allay fear in the international community. We found important benefits of international cooperation for combating infectious diseases, and it should be encouraged in future outbreaks.

### *Conflicts of interest*

None declared.

## Funding

None.

## References

1. Hui DS, Perlman S, Zumla A. Spread of MERS to South Korea and China. *Lancet Respiratory Medicine*, 2015, 3:509–510. doi:10.1016/S2213-2600(15)00238-6 pmid:26050550
2. *Middle East respiratory syndrome coronavirus (MERS-CoV) – Republic of Korea*. Geneva, World Health Organization, 2015 (<http://www.who.int/csr/don/21-july-2015-mers-korea/en/>, accessed 14 January 2016).
3. *High-level messages*. Manila, World Health Organization Regional Office for the Western Pacific, 2015 (<http://www.wpro.who.int/mediacentre/mers-hlmsg/en/>, accessed 14 January 2016).
4. *Joint mission to Republic of Korea on MERS-CoV begins well*. Manila, World Health Organization Regional Office for the Western Pacific, 2015 (<http://www.wpro.who.int/mediacentre/releases/2015/201506010/en/>, accessed 14 January 2016).
5. *WHO statement on the ninth meeting of the IHR Emergency Committee regarding MERS-CoV*. Geneva, World Health Organization, 2015 (<http://www.who.int/mediacentre/news/statements/2015/ihr-ec-mers/en/>, accessed 14 January 2016).
6. Press conference – WHO Director-General Dr Margaret Chan regarding the current situation of MERS on the Republic of Korea. *MERS Facts*, 2015 (<http://www.mersfacts.com/press-conference-who-director-general-dr-margaret-chan-regarding-the-current-situation-of-mers-on-the-republic-of-south-korea/>, accessed 14 January 2016).
7. Cowling BJ, Park M, Fang VJ et al. Preliminary epidemiological assessment of MERS-CoV outbreak in South Korea May to June 2015. *Eurosurveillance: European Communicable Disease Bulletin*, 2015, 20(25). pmid:26132767
8. *Press Release – Measures to reform National Infection Prevention and Control System for the purpose of immediate response to emerging infectious disease*. Sejong, Ministry of Health and Welfare, 2015 ([http://english.mohw.go.kr/front\\_eng/sg/ssg0111vw.jsp?PAR\\_MENU\\_ID=1001&MENU\\_ID=100111&page=1&CONT\\_SEQ=326060](http://english.mohw.go.kr/front_eng/sg/ssg0111vw.jsp?PAR_MENU_ID=1001&MENU_ID=100111&page=1&CONT_SEQ=326060), accessed 14 January 2016).
9. *Middle East respiratory syndrome information*. Osong, Korean Centers for Disease Control and Prevention, 2015 (<http://www.mers.go.kr>, accessed 14 January 2016).
10. *Press Release – MERS Hotline expands services*. Sejong, Ministry of Health and Welfare, 2015 ([http://english.mohw.go.kr/front\\_eng/sg/ssg0111ls.jsp?PAR\\_MENU\\_ID=1001&MENU\\_ID=100111&page=11](http://english.mohw.go.kr/front_eng/sg/ssg0111ls.jsp?PAR_MENU_ID=1001&MENU_ID=100111&page=11), accessed 14 January 2016).
11. *Google Trends on MERS in 2015 (worldwide, all categories, web search)* (<https://www.google.com/trends/xplore?q=mers&date=1%2F2015%2012m&cmpt=date&tz=Etc%2FGMT-8>, accessed 14 January 2016).
12. *2015 International Symposium on Middle East respiratory syndrome*. Seoul, Seoul National University College of Medicine, 2015 (<http://www.ism2015.org/>, accessed 14 January 2016).