**CASE STUDY TITLE**
Qatar experience on MERS-CoV One Health Surveillance and Response, 2012-2015

**PROJECT/ACTIVITY TITLE**
Qatar National Response to MERS-CoV, 2012 to 2015

**CONTACT INFORMATION**

<table>
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<td>ORGANIZATION:</td>
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**WHAT DOMAIN(S) DO YOU WORK IN?**

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<tr>
<th>Human health</th>
<th>Animal health</th>
<th>Environmental health</th>
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**OHS AREA(S) OF FOCUS ADDRESSED BY CASE STUDY**

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<th>Cross-Agency Communication and Collaboration</th>
<th>Training and Resources</th>
<th>Technologies and Methodologies</th>
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**PROBLEM DESCRIPTION (150 word maximum)**

*Summarize the problem/situation that was addressed with a OHS approach.*

The emergence of the Middle East Respiratory Syndrome Corona Virus (MERS-CoV) in 2012 had placed a great concern on the public health institutions globally and in particular in the Arab region. The gaps in knowledge related to the novel virus put the healthcare systems in Qatar and the entire region in critical position amid growing concerns that this virus might take a deadly pattern.

As the second reported case in Qatar had a documented relationship with animals, veterinary and environmental health sectors were invited to join the national outbreak control taskforce.

To establish sound interventions, the taskforce had to identify the possible source of infection and the mode of transmission. These areas remained a challenge as the number of cases in Qatar mounted to 15 with 6 deaths.

This case study describes how the One-Health Approach informed Surveillance and response to MERS-CoV in Qatar during the period, 2012-2015.

**ACTION TAKEN (500 word maximum)**

*Describe how the problem was addressed and how the action taken was measured. Please include a description of the collaborators and the data sources used.*

The national outbreak control taskforce (NOCT) was revitalized. This taskforce, which was first established as a requirement of IHR 2005, played a fundamental role in the national response to SARS and H1N1. Through this taskforce all of the subsequent actions were put into effect including the assembly of a national joint investigation team composed of epidemiologist, nurses, health inspectors, environmental specialist, laboratory specialist, veterinary epidemiologist, veterinarian, and assistant veterinarian.

To get the required orientation for the NOCT, Qatar authorities requested official technical missions from WHO and FAO. For the same purpose, CDC Atlanta, Health Protection Agency of the UK, and Erasmus
Medical Center of the Netherlands were also invited to join the technical discussions. This partnership had yielded a comprehensive road map for MERS-CoV surveillance and response.

The components of the road map for MERS-CoV one Health surveillance included: capacity building for Human and Animal laboratories; the joint investigation for human and animal suspected cases coupled with contact tracing; community engagement particularly in raising the awareness about the suspected symptoms to encourage early reporting of cases; to carry out a national case-control study along with sero epidemiological survey targeting the most-at-risk group; retrospective testing of animal and human stored samples; enhancement of Severe Acute Respiratory Infection (SARI) surveillance; active surveillance of risk group to allow for early detection by testing of animals at slaughter house, camel race, and at the ports of entry, training of animal and human health practitioners on early detection of cases, in addition to perform an environmental surveillance coupled with an animal infection models.

All of the 15 reported cases were timely investigated by the joint team. The investigation revealed that 9 of them had a direct contact with camels; four were camel owners and 5 were camel workers. The camels around these nine cases tested positive for MERS-CoV RNA and the virus was identical. Three cases were detected by the active surveillance. Most of the hypothesis related to the mode of transmission and the source of infection stemmed from these findings. Control measures were also informed by the results obtained from the achieved studies. Qatar was the first to report that camels can be a potential source for MERS-CoV virus.

The initiated series of studies yielded insights into some essential aspects of this MERS-CoV. A better understanding of the role of animals in the spread of MERS CoV was concluded along with the extent of transmission to humans in addition to the possible risk factors. These findings have been shared with and discussed by the WHO, FAO and OIE, and had been used to provide guidance for studies and prevention measures in Qatar and in other countries. The joint studies also led to several high profile publications.

FACILITATORS AND BARRIERS (100 words max each)

Please list and describe any factors that contributed positively to this project/activity.

The leaders’ commitment to One-Health approach that governed the response to MERS-CoV was largely attributed to the previous experiences with SARS and H1N1. Despite implementation of the IHR 2005 had already allowed for the establishment of joint committees, yet these experiences helped crystallize the value of integrating efforts to the policy makers. The strategic technical collaboration that joint Qatar authorities with the international technical bodies had greatly facilitated carrying out the recommended studies. The early community engagement was another key factor that eased the investigation and response of suspected cases.

Please list and describe any factors that were a challenge or barrier to overcome.

Appropriate technical surveillance guidance from the veterinary sector, and (2) the poor risk perception among people at risk. Despite the growing evidence that camels are the only known host to the virus, most of the vulnerable groups had a strong belief that no harm can happen to them from keeping an intimate relationship with camels; drinking unpasteurized camel milk, and using its urine for cure.

LESSONS LEARNED (250 word maximum)
Please describe any lessons learned or best practices identified by this project/activity.

The prompt and timely joint investigation was a crucial factor to solicit the required evidence. Further, the adopted intersectoral collaboration for One-Health surveillance has never been such important, especially with zoonotic diseases. Nonetheless, as the epidemic seemed to uniquely emerge from the Arab Peninsula, the regional collaboration in sharing surveillance data and results of scientific research is indispensable to answer the yet gaps in our knowledge about the disease.

While it was necessary to display the local technical capacity to investigate and confirm MERS-CoV and thereby minimizing the time and cost for the public health measures, it helped encourage suspected cases to report early to the healthcare facilities. Community engagement was the key to establish ‘One-Health Surveillance’. Self reporting of cases compared to the rejection and denial of the disease was a dramatic behavior change of the people at risk. However, that imposed a greater responsibility on the officials to remain accountable and committed to the proclaimed policy of openness. Furthermore, among the several factors that facilitated the response operations, the constant policy of transparent ERC allowed for the community to get abreast of the situation. It also helped maintain the public trust in the national competent authorities.

ADDITIONAL COMMENTS (75 words max)

- This paper sought to provide opportunities to explore the strengths and challenges faced by health system partners in preparing for and responding to MERS-CoV.

- The OHS has been central to generating evidence to obtain a better understanding of MERS-CoV. Thus, the same approach will have to be maintained to assess the effectiveness of the control measures. As more emerging viruses remain to be a constant challenge, the one-health surveillance must be fostered at all levels.