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MERS CoV infection - ecological investigations

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Background: First discovered in the summer of 2012 in Saudi Arabia, the Middle Eastern Respiratory Syndrome (MERS) caused by the Middle Eastern Respiratory Syndrome Corona virus (MERS CoV) is an emerging infection that has, evoked fears of precipitating a worldwide pandemic. Till date, 163 laboratory confirmed cases have been reported in 9 countries worldwide with the vast majority (n = 132) of these cases of MERS CoV infection occurring in Saudi Arabia. Spatially, most of the remaining cases have occurred in the Middle East. Cases (n = 12) from other than the Middle East (France, Germany, Italy, Tunisia, UK) have all been linked with recent travel to the region. However, much remains unknown about the reservoirs and transmission pathways of this virus.

Methods & Materials: To better understand the transmission dynamics of MERS CoV, we carried out environmental assessment of laboratory confirmed cases of MERS CoV infection in Bisha, Qaseem, Hafr Batin and Ahsa regions of Saudi Arabia. We reviewed initial case investigation files of the case prior to interviewing them and/or their contacts (for cases that had died or were in ICU). Their houses and surrounding environment were investigated for possible environmental clues to MERS CoV transmission. This led us to caves, farms and abandoned buildings.

Results: Contrary to the media frenzy about camels and MERS CoV transmission, rarely did any of the cases we investigated have exposure to camels. In the Ahsa outbreak in the Eastern region of Saudi Arabia, a large subset of the patients investigated were initially reported as having no animal exposure. We observed the unrestricted mixing of wild and domestic animals in animal markets in a manner that could definitely facilitate repeated pathogen spillover and emergence. Additionally, some of these animals were overtly sick. Evidence for trading in bats was also documented. Wild animals were transported to the markets over large distances in questionable welfare conditions that may also encourage disease emergence.

Conclusion: Not only did our investigations reveal complex environmental exposures initially undocumented, our experience reinforces the need for rapid investigation of emerging zoonotic infections such as MERS while wholly incorporating the One Health paradigm.

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Outbreak investigation report of measles among children under five years in Katsina State, Northern Nigeria, January 2013

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Background: Measles is the fifth leading cause of death among children under five years in Nigeria despite immunization programs. In Nigeria, the national policy recommends measles vaccination at 9 months and a booster at 5 years which can be accessed during routine immunization campaigns. Poor immunization history and close contact with neighbouring measles cases has been associated with outbreak of measles infection among children under five years in katsina state. The aim of the study was to control and determine the factors associated with the outbreak.

Methods & Materials: A descriptive cross sectional analysis including review of the medical records was carried out. Active case search through house to house visit was also conducted to identify cases. A line list was formed and data entered into a Microsoft excel spread sheet. Blood specimens were collected from fifteen samples of suspected cases and sent for serum IgM laboratory analysis. A community based case-control study was also conducted to identify the risk factors associated with the outbreak and statistical analysis was done using epi info version 3.5 software

Results: A total of 1046 suspected cases and 5 deaths were reported from all the local governments of the state with a cumulative attack rate of 0.01% and Case Fatality ratio of 0.4%. Majority of cases (9.8%) were from Bakori local government with an Attack Rate of 0.04% and were females (63%). The most affected group was between 12-59 months with an Attack rate of 0.06%. Poor immunization history was found to be associated with the occurrence of cases (0.42 < OR < 6.91 at 95% CI, p-value < 0.05). Of the fifteen blood samples analysed, thirteen were serum IgM confirmed and two were indeterminate.

Conclusion: Low routine Immunisation coverage has resulted in a wide-spread measles outbreak affecting mostly the southern part of katsina state due to the fact that states neighbouring them (Zamfara and Kaduna) are also in measles outbreak. The study has provided the necessary information required to limit spread of the disease and prevent future recurrence of the outbreak.

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