Adverse reactions to field vaccination against lumpy skin disease in cattle

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**Background:** Lumpy skin disease (LSD) is an emerging pox disease that can cause serious losses in cattle industry due to decreased productivity, cost of veterinary treatments, death, and impact on the international trade of live animals and animal products. The disease originated from Africa, but it has spread to countries of the Middle East and poses a serious threat to Europe and Asia. Recently, field veterinarians in Jordan reported a range of clinical signs seen after the LSD vaccination in cattle.

**Methods & Materials:** During the outbreak of LSD in Jordan, farmers outside the outbreak governorate (Irbid) were recommended to vaccinate their cattle of all ages, types and sexes using a sheep pox virus (SPPV) RM65 vaccine, Jovivac. After the vaccination campaign was initiated, post vaccinal reactions were suspected. Affected farms were investigated and data collected about animals on each farm that practiced vaccination against LSD.

**Results:** Sixty-three dairy cattle farms, with a total of 19,539 animals, were included in the study. Of those, 56 farms reported adverse clinical signs after vaccine administration. The duration between vaccine administration and appearance of adverse clinical signs ranged from 3 to 20 days (Mean = 13.7, SD 4.1).

Clinical signs ranged from 1 to 20 days (Mean = 10.3, SD 3.9). Clinical signs were similar to those observed with natural cases of lumpy skin disease.

These included fever and variable sized cutaneous nodules that could be seen anywhere on the body. Some cattle had swollen lymph nodes, while a few pregnant animals aborted. The percentage of affected cattle ranged from 0.3 to 25% (Mean = 8, SD 5.1). Fever, decreased feed intake, and decreased milk production were seen in 83.9, 85.7, and 94.6% in cattle on the affected farms, respectively. All affected cattle displayed skin nodules over their entire bodies. No mortalities were reported due to vaccine adverse reactions. Duration (course) of clinical signs ranged from 3 to 20 days (Mean = 13.7, SD 4.1).

**Conclusion:** LSD vaccines can be associated with severe reaction that can be confused with natural infection. Further studies are warranted to identify safe vaccines for this disease.

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The role of diabetes in the severity of 2009 influenza A (H1N1) and the Middle East respiratory syndrome coronavirus (MERS-CoV): A systematic review and meta-analysis

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Background: A number of acute respiratory infections outbreaks such as the 2009 influenza A (H1N1) and the Middle East respiratory syndrome coronavirus (MERS-CoV) have emerged and presented a considerable global public health threat. Epidemiologic evidence suggest that diabetic subjects are more susceptible to these conditions. However, the global influence of diabetes to the severity of H1N1 and MERS-CoV is yet to be evaluated.

Objective: The aim of this study was to carry out a systematic review and meta-analysis documenting the prevalence of diabetes in sever H1N1 and MERS-CoV to enable estimating its contribution to the severity of these conditions.

Methods & Materials: A search strategy was developed for online databases (PubMed, Ovid MEDLINE, Embase and Embase Classic) using H1N1, MERS-CoV and DIABETES as search terms. Reports documenting the prevalence of diabetes in these conditions were identified. Meta-analysis for the proportions of diabetes in sever conditions (95% confidence intervals, CI) was carried out (29 H1N1 studies, n=92,948 subjects and 9 MERS-CoV studies, n=308). Weighted averages of the extracted information and subgroup analysis (by region) were carried out.

Results: Average age of H1N1 patients (38.0 ± 9.2 yrs) was lower than that MERS-CoV patients (54.9 ± 10.1 yrs, p<0.05). The prevalence rates of clinical symptoms such as pyrexia, dyspnea, pharyngitis and pertussis were comparable between the two conditions. Compared to MERS-CoV patients, H1N1 subjects exhibited 3-fold lower prevalence of cardiovascular diseases and 2- and 4-fold higher obesity and immunosuppression rates, respectively. The prevalence of diabetes in sever H1N1 was 14.6% (95%CI: 12.3-17.0%; p<0.001), a 3.7-fold lower than in MERS-CoV (54.4%; 95%CI: 29.4-79.5; p<0.001). The contribution of diabetes to the severity of H1N1 from Asia (18%) and North America (20%) was 2-fold higher than that from South America (9.8%) and Europe (10%).

Conclusion: The effect of diabetes is 4-fold higher in MERS-CoV than in H1N1 and may play a significant role in the susceptibility to these conditions and vulnerability to their ensuing sever complications. The high prevalence of diabetes in H1N1 in North America and Asia may reflect its elevated prevalence in these regions.