



## Preparedness and Response to Emerging Veterinary Disease Outbreaks

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### Drivers of emergence of infectious animal diseases: what are the challenges?

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**Background:** During the past decade, livestock diseases have (re-)emerged in areas where they had been previously eradicated or never been recorded before (e.g. BTV, EHD, FMD). Livestock diseases spread irrespective of borders, and therefore, reliable methods are required to help decision-makers to identify potential threats and try stopping their (re-)emergence. How to anticipate these (re-)emergences? What are the challenges? Some options of responses are possible, e.g. multidisciplinary and evidence-based method for prioritizing livestock diseases of food-producing animals and zoonoses, multi-criteria decision analysis of drivers of emergence of infectious animal diseases, scenario analysis and preparedness, epidemiological surveillance, biosecurity to increase the resilience of farms and points of entry at country level, contingency plan, crash test, awareness, training and dissemination, etc. The focus of this presentation is about the drivers. A driver was defined as a factor that has the potential to directly or indirectly precipitate (“drive”) or lead to the emergence or increasing incidence of infectious animal diseases.

**Materials & methods:** Ranking methods and multi-criteria decision analysis, in addition to clustering and sensitivity analyses, are cost-effective tools for such purpose and were applied to prioritize a list of selected diseases (N = 32 including 8 zoonoses) based on the opinion of 62 experts in accordance with 50 drivers-related criteria.

**Results:** Diseases appearing in the upper ranking were porcine epidemic diarrhoea, foot-and-mouth disease, low pathogenic avian influenza, African horse sickness and highly pathogenic avian influenza.

**Conclusion and significance:** As there is still limited scientific knowledge on the topic, expert elicitation of knowledge and multi-criteria decision analysis, in addition to clustering and sensitivity analyses, are very important to prioritize emerging infectious animal diseases including zoonoses based on their drivers. In addition, gap analysis permitted to identify the most important drivers that need more knowledge, information or surveillance. The follow up of the most important drivers could permit us to predict which emerging infectious diseases have more chance to appear, and by the way to be more prompt to anticipate its (re-)emergence and the response (e.g. vaccine development and/or its production in due time with sufficient quantity). The most important challenge should be the means to elicit independent and representative experts regularly in order to update information on drivers and also, to anticipate the response against the top of emerging animal diseases. The present methodology could be applied to other emerging animal diseases.