

The Growing Threat of Vector-borne Disease (VBD) in Humans and Animals

Recommendations for Optimising Solutions and Innovations across all Species and all Regions

The International Federation for Animal Health (IFAH), with the support of the Bill & Melinda Gates Foundation, commissioned Oxford Analytica to write a white paper looking at recommendations regarding solutions and innovations in the context of the growing threat presented by vector-borne diseases (VBDs) to both animals and people. This white paper collates the opinions of a wide range of key opinion leaders with varied and relevant expertise, presenting a snapshot of the situation today, complete with the key challenges faced and what is therefore required to develop effective solutions in tackling vector-borne diseases globally.

Initially looking at the health, welfare and economic impacts of arthropod vectors and the pathogens they transmit, the main barriers to controlling VBDs are then explored.

A reflection on the lack of surveillance and disease impact data highlights that the actual significance of these diseases is often very difficult to quantify when accurate statistics remain so elusive, even in developed countries. A further important reason to improve surveillance across all regions is to allow detailed risk analysis, including the evaluation of the potential spread to new areas or the introduction of exotic species/diseases and then to see if controls implemented are actually effective.

The complicated issue of ensuring pharmaceutical sector investment into developing new vaccinations and medicines for treatment is examined. The point is made that it often takes millions of dollars and many years of investment to bring a new molecule to market and as a result, there must exist a commercial market (which is often not the case for VBDs) for this to happen.

Equally, the importance of educating and involving local governments, strategy implementation staff and animal owners when putting in place strategies to manage and control VBDs is stressed. For example, more donor-funded information campaigns for farmers will help them to know when it is most appropriate to use insecticides, which ones to use and how. Communities and stakeholders (e.g. local governments) need to be shown examples of success stories, and assisted in undertaking cost-benefit analysis of VBD management and control versus inaction to prompt engagement with (and therefore the success of) any control strategies.

The report also highlights that our world is changing and reminds us that the impact of climate change, habitat change introduced by humans (e.g. wetland creation), the increased movement of goods, humans, livestock and

companion animals worldwide on vector distribution and VBD incidence, should not be underestimated. The opinion is shared that for many VBDs, insecticide resistance is probably the single greatest threat to traditional approaches to disease management. As a result, a recommendation that awareness of the need to minimise the development of resistance is paramount in any attempt to use insecticides to control vector populations and perhaps other strategies should be used more heavily, such as various types of physical barriers to protect hosts from vector feeding.



A brief review of some of the novel techniques for the control of VBDs that are being researched identifies that this activity seems to be mainly restricted to human health (for example, vector genetic modification and the manipulation of endosymbiont bacteria). Another valuable area of research highlighted is with respect to identifying the qualities of maintaining healthy animals and management systems that foster these qualities. Especially in developing countries, improvement of basic husbandry practices can mean a significant contribution in this field.

As a result of the main challenges identified, the paper considers a multi-faceted approach as the most effective way to tackle vector-borne diseases, incorporating treatments and vaccines, as well as efforts to reduce the population of the vector directly (although it is acknowledged that total eradication is often unrealistic). Incorporated into this should be a One Health approach, recognising the interdependency of environmental, human and animal health and encouraging collaboration between all health sectors to make bigger leaps in progress.



Kim Hardie, Communications Director for the International Federation for Animal Health (IFAH). IFAH represents international companies as well as associations which comprise small and medium-sized enterprises, engaged in R&D, manufacturing and commercialisation of veterinary medicines, vaccines and other animal health products. IFAH members representation approximately 80% of the global market. Email: k.hardie@ifahsec.org