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Editorial

Animal health in the 21st century—A global challenge

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ABSTRACT

On the occasion of the centenary of the Friedrich-Loeffler-Institut, a conference entitled 'Animal Health in the 21st Century' was held in Greifswald, Germany, on 11–13 October 2010 to discuss current and future challenges regarding the global situation regarding infectious animal diseases and zoonoses, animal breeding, animal nutrition and animal welfare. Particular attention was paid to the impact of recent developments and anticipated future trends on livestock production.

A growing world population, increasing demand for food of animal origin, climate change and globalisation cause different ecosystems to move closer and to overlap at both local and global level. This promotes the emergence of new pathogens at the intersections between the habitats of humans, domestic animals and wildlife; backyard animal husbandry with poor biosecurity is another element that favours the emergence of pathogens. Poverty and insecurity of people in many regions of the world sustain this trend.

As a consequence of the global exchange of people and goods, these pathogens are now able to spread easily over long distances. If, in the new environment, they encounter favourable conditions such as a high density of naive populations, adequate vectors etc., they can spread further or even become endemic, causing devastating losses. With regard to infectious diseases, the facts that approximately 60% of all known pathogens and 75% of emerging pathogens are zoonotic in nature, with about 70% of all emerging zoonotic pathogens representing vector-transmitted diseases cause increasing concern (Taylor et al., 2001). Moreover, global warming may lead to a massive expansion of the endemic areas for many vector-borne diseases as vectors and the pathogens they carry are expected to spread. The recent bluetongue epidemic that took us by surprise in Northern Europe could be seen as a herald for this scenario.

On the other hand, scientific progress has brought about not only excellent diagnostic techniques which allow the rapid detection of infections, but also highly efficient vaccines, antimicrobials and other therapeutics. The achievements in diagnosis, prevention and therapy have been largely influenced by the advent of molecular biological techniques and biotechnology. At the same time, modern computing and communication facilities allow the almost instant exchange of data on emerging diseases and virtually all other animal health risks so that appropriate preventive measures can be taken everywhere. Powerful computer processors support data management, facilitating the development of models to assist decision findings in controlling outbreaks.

In consequence, unprecedented technology is available to meet the challenges of today and tomorrow, but in reality, more than modern technology is required. Successful animal disease control still depends on the willingness of livestock keepers and the associated industry to cooperate: the competent veterinary authorities can only actively intervene with the available instruments once they are notified that there is a suspected case of a disease. The tendency to wait for a very long time with notifications or the resistance to official measures and orders like for vaccinations is of concern. Even the best technology will not be of any help in such a case. To overcome these constraints, animal keepers must be actively involved to raise awareness and to join forces. This might require a review of the strategies used so far, pursuing a more participatory approach. Finally and most importantly, a holistic approach must be adopted to meet present and future challenges by getting physicians, veterinarians, biologists, sociologists and many others to cooperate for a One Health approach closely linking human and veterinary medicine (Kaplan et al., 2009).

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However, it will not be sufficient to bring together only medical and veterinary experts with molecular biologists. The role of the (new) media needs to be analyzed in detail as well, so that they can be used for matters of animal health. These questions are of interest not only for veterinary medicine. Outbreaks of measles in spite of available vaccines and a well-functioning medical supply network, and the experiences made with the latest H1N1 pandemic in 2009 has shown that those affected do not always accept a disease prophylaxis, even if it is efficient according to biological and medical criteria (Raude et al., 2010). The "One Health" challenge therefore constitutes a matter of general societal interest.

1. Veterinary good governance

International organizations like the World Organisation for Animal Health, founded in 1924 as the Office International des Epizooties (OIE), need to pay even more attention than the national governments to the consequences of globalisation, climate change and the increase in the human population, in particular in the less developed countries. The shift from poverty to the middle classes, which can currently be observed in many societies, is expected to lead to an unprecedented increase in the movement of people and commodities. This bears considerable risks for human and animal health which need to be recognized, assessed, managed and communicated. Due to the increasing human population and shift from poverty to middle-class, the demand for animal protein, i.e. milk, eggs and meat, may raise by 30% until 2030, which will inevitably lead to an intensification of production at the global level. The need for more animal protein will result in optimizing animal production procedures on the basis of cost-benefit calculations, raising the use of fertilizers and increasingly including natural pastoral resources in animal production global level, notwithstanding the negative consequences of these predictable developments. However, the potential of one billion poor livestock producers should not be neglected.

To cope with the challenges of a globally intensified animal production, a Global Public Good concept has been proposed (Smith et al., 2003). This concept refers to goods whose benefits extend to all countries, people and generations. It postulates that all countries depend on each other in the field of animal disease control. Failure of a single country to take appropriate measures can endanger the world. Since the majority of animal pathogens is zoonotic in nature, a One Health approach is proposed as a global strategy for preventing and managing risks at the human–animal interphase.

Good Governance of veterinary services is necessary, first and foremost, for the protection of countries and regions from animal diseases and zoonoses, including emerging and re-emerging diseases. Increasing, unprecedented movement of commodities and people in an era of globalisation as well as global warming lead to increased risks and challenges relating to emerging and re-emerging highly pathogenic animal diseases, including zoonoses. These risks are highlighted when one considers that 60% of human pathogens, 75% of emerging diseases and 80% of agents with potential bioterrorist use are zoonotic pathogens (Taylor et al., 2001; Woolhouse and Gowtage-Sequeria, 2005; Jones et al., 2008).

Accordingly, in light of the unprecedented global challenges, Good Governance of veterinary services serves as one of the key objectives of the OIE Strategic Plan 2011–2015. Animal health systems including veterinary services are considered as global public goods. Good governance of animal health systems, based on a close public private partnership, is the responsibility of all Governments and is dependent on the correct implementation of good governance mechanisms.

The OIE Performance of Veterinary Services (PVS) Pathway supports and promotes the good governance of veterinary services (OIE, 2010). It describes the OIE strategy regarding the use of OIE standards on quality and evaluation of veterinary services and guidelines on veterinary legislation. Following this pathway allows countries to support veterinary services in establishing their current level of performance, identifying gaps and weaknesses in their ability to comply with OIE international standards, and forming a shared vision with stakeholders (including the private sector), with the goal of establishing priorities and securing the investments needed to carry out strategic initiatives.

There is a crucial need for appropriate legislation in the animal health field and its strict implementation through appropriate human and financial resources allowing animal health systems to provide for: appropriate surveillance, early detection and transparency, rapid response to animal disease outbreaks, including biosecurity measures, compensation, as well as vaccination when appropriate.

In many OIE Member Countries, veterinary legislation has not been updated for many years and is obsolete or inadequate in structure and content for the challenges facing Veterinary Services in today's world. Veterinary legislation must therefore be updated to address emerging threats and modern societal expectations. With this goal in mind, the OIE is taking important steps to support its Member Countries. In July 2009, the OIE issued a guidance document for Member Countries, which provides a minimal technical framework to help them update their national legislation in accordance with international standards.

Methods of Good Governance, including standards for quality and evaluation of veterinary services, have been democratically adopted in the form of international standards by the 177 OIE Member Countries. Key elements of good governance include but are not limited to the following:

- Building and maintaining efficient epidemiosurveillance networks and territorial meshing in the entire national territory, potentially for all of terrestrial and aquatic diseases.
- Creating alliances between public and private sectors – the efficiency and reliability of an epidemiological surveillance system depends on the level of knowledge and expertise of all the participants and good co-operation between public and private sectors.