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Exotic Animal Diseases Bulletin

Investment in Animal Health Services contributes to Public Health

Many emerging and re-emerging animal diseases are zoonoses and pose significant threats to human health. The Australian Government is addressing this threat by strengthening links between animal and human health agencies, which will contribute to protecting public health.

Emerging and re-emerging zoonotic diseases

Animals are thought to be the origin of at least 70% of all emerging or re-emerging human infectious diseases[1] and wildlife contribute significantly to this threat.[2]

Some of the key drivers and risk factors for infectious disease emergence follow.

Human demographics and behaviour

From 1950 to 2000, the global population increased by more than 3.5 billion to approximately 6 billion and it is estimated to be more than 8 billion by 2030.[3,4] If the current trend to increasing urbanisation continues, then there will be nearly 5 billion city dwellers by 2030, representing 60% of global population. Since 1980, 80% of the total increase in livestock production has been in large-scale industrial operations in urban areas.[5] (Figure 1.)

Human populations that live in close proximity to animals are at higher risk of being exposed to emerging infectious disease. Once introduced, infectious disease agents are more likely to establish and spread in large populations where there is a lot of mixing. The classic example in the past fifty years has been the influenza virus.

Changes in host-pathogen ecology including climate, natural environment or land use

Ecological change is one of the most frequently identified factors associated with disease emergence[6] and is frequently driven by agricultural development which alters the environment and land use to suit human needs. For example, Nipah and Hendra viruses have existed in flying fox populations for probably thousands of years with no human infection being detected. However, in the last twenty years extensive changes in land use have affected the habitats of the flying fox, forcing them into closer association with domestic animals.

Technology and industry

Globalisation and intensification of production practices have assisted the rapid spread of emerging infectious disease. Contamination of food products by certain bacteria has led to food-borne disease in populations separated by some distance within continents, and in some cases across the globe.[7] The practice of feeding meat and bone meal to ruminants led to the amplification of bovine spongiform encephalopathy (BSE) in the UK cattle herd.[8,9]

International travel and commerce

The dissemination of organisms via travel is well documented[10] including the spread of Spanish influenza around the world in 1918–1919. More recently, the rapid distribution of the severe acute respiratory syndrome (SARS) virus to a number of epicentres around the globe was a reminder that faster and more regular travel can lead to new problems with emerging infectious diseases.

Breakdown in public health measures

These difficulties relate to economic and social problems in the maintenance of basic sanitation systems and health infrastructure. Poverty, wars or other forms of mass social upheaval including natural disasters can lead to the re-emergence of diseases such as salmonellosis.

What is 'one medicine'?

The concept of 'one medicine', as described by Schwabe,[11] encompasses an understanding of the evolution, spread

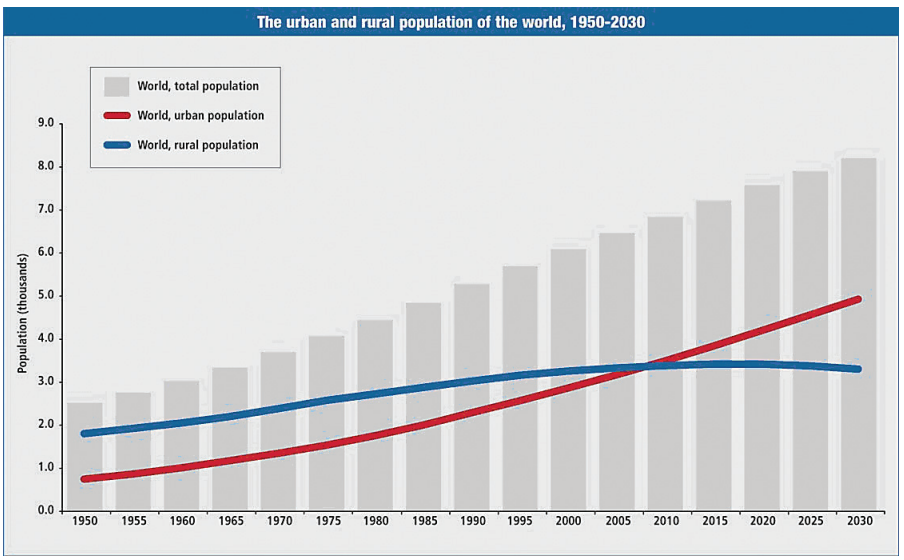

Figure 1.

and control of zoonotic diseases that are major threats to public health. In light of worldwide animal and human health crises such as SARS, H5N1 avian influenza, Nipah and BSE the need for an interdisciplinary approach to zoonoses is gaining significant international recognition. Therefore, strengthening links between animal and human health systems and investing in animal health services will continue to be important in contributing to the global public good.

What is Australia doing?

Australia is investing in developing the capability and capacity of animal health services nationally, regionally and globally. This investment supports activities that aim to prevent the emergence, establishment and spread of infectious diseases that can lead to adverse human health and socio-economic effects. This particularly applies to zoonoses that do not present clinically in the reservoir host animal but can have serious health effects for humans and other animal species, such as Hendra virus, Nipah virus and toxoplasmosis.

Australian human and animal health agencies work with organisations such as the Australian Agency for International Development (AusAID), the Australian Centre for International Agricultural Research (ACIAR), OIE, Food and Agriculture Organisation (FAO), World Health Organisation (WHO), Asia-Pacific Economic Cooperation (APEC) and Association of Southeast Asian Nations (ASEAN).

What is happening internationally?

At the 74th General Session of the OIE in Paris, May 2006, it was noted that *'pathogens are globalising…and the great majority of diseases can now be considered to have become transboundary diseases',* and that *'…the economic and social benefit of taking action upstream of crises by investing in surveillance, early detection and rapid response actions, which are much more effective and a lot less expensive than those to manage a crisis.'*[12]

A cooperative approach is required because transboundary diseases, by definition, are a threat to all countries.

International organisations such as the OIE, FAO, WHO, World Bank and other forums such as the G8 Leaders acknowledge the value of investing in veterinary services and improved cooperation between the animal and human health communities in the fight against emerging and re-emerging diseases including zoonoses.[13–15]

Dr Bernard Vallat, Director-General of the OIE commented at the G8 Leaders' Summit, Russia July 2006[16]: 'The Summit recognised the animal health services stand at the very core of global surveillance, monitoring and rapid response mechanisms to infectious animal diseases including those transmissible to humans.'[17]

The Global Early Warning System (GLEWS), which aims to predict and respond to major animal diseases throughout the world was launched by the FAO, OIE and WHO in July 2006.[18] GLEWS combines the power of the coordinating, tracking, verification and alert mechanisms already present within the OIE, FAO and WHO. The GLEWS initiative has the potential to improve global preparedness and facilitate transparent exchange of information between countries.

Conclusion

It is vital to invest in and adequately resource public and private sector surveillance, diagnostic, response, management and training systems with the capacity to prevent and control the real threat of emerging diseases. Domestic systems, such as those focused on scanning and detection, will continue to be refined. An interdisciplinary approach with full engagement of human health and veterinary agencies is integral to addressing the emerging infectious disease threat.

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