

## **Animals front and centre to emerging human disease**

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Perspectives on the relationship of disease emergence in humans and domestic animals changed dramatically. The underlying causes and mechanisms of emerging infectious disease were primarily attributed to aberrations in human behaviour. Little attention it seems was paid to the pivotal role animals play as zoonotic agents in the origin and transmission of many emerging diseases and the biological niches that microorganisms are all too capable of exploiting.

A comprehensive literature review conducted by the centre of Tropical Veterinary medicine, University of Edinburgh identified 1415 species of infectious organisms known to be pathogenic to humans. Sixty-one percent of human pathogens are zoonotic or capable of being transmitted between human and animals. One hundred seventy five (175) human pathogens fit the definition as causes of new or emerging disease. Of the 175 species, 75 percent are zoonotic, nearly one-half are viruses and vectors like mosquitos, ticks and midges are often involved in transmission. Overall, emerging diseases are twice as likely to be associated with zoonotic pathogens.

The importance of the zoonotic nature of disease is often found in how diseases are initially established in human hosts rather than the severity of disease that follows. Human immunodeficiency virus (HIV) for instance originated in monkeys, jumped the species barrier and was then transmitted person to person, eventually infecting over 30 million people. With HIV-AIDS fully engaged as a human problem its origin as zoonosis is often forgotten. The role of swine and birds as mixing vessels for influenza viruses like influenza A H5N1 is well known, but it's the potential of spread from human to human that incites fear of pandemics. Dengue fever, initially a viral disease of nonhuman primates in Africa and its mosquito vector are now established in over 100 countries, and put 3 billion people at risk every year.

The management of zoonotic pathogens poses challenges outside the scope of traditional medical system and demands much closer collaboration between medical and veterinary scientists. Disease control in the future must consider both animals and people. The concept of "One Health" is no longer just academic fodder.

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