One health – one destiny: appreciating the connectivity of health among ecosystems, wildlife, livestock and people

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FAO's current work in animal health addresses emerging infectious diseases at the animal-human-ecosystem interface.

The concept of addressing the connectivity between animal and human health is not new. In the 1960s, Calvin Schwabe, a veterinary epidemiologist and parasitologist in the United States, coined the expression "One Medicine" calling for a unified approach between veterinary and human medicine to combat zoonotic diseases – those diseases transmitted from animals to humans. Building on this concept, the Wildlife Conservation Society developed the term "One World, One Health™" and established, with the participation of FAO, the Manhattan Principles, which focus on preventing the emergence and re-emergence of diseases in the modern globalized world. The concept has continued to evolve; in 2010 FAO and international partners began to use the term "One Health" to express the linkages between animal and human health and their dependence on ecological or environmental health. It has become clear that the emergence of infectious diseases, while complex in nature, is driven to some extent by ecosystem changes associated with growing global human population, increasing demands for animal protein, unsustainable natural resource consumption, loss of biodiversity and habitat fragmentation, which lead to the loss of ecosystem services. More intensive farming systems are also fertile breeding grounds for pathogens that can infect multiple hosts including livestock, wildlife and people.

Natural systems such as forests, grasslands, wetlands and oceans provide ecological services that all life depends on. Forests, for example, help purify air and water and mitigate greenhouse gas buildup in the atmosphere. Alteration in natural systems – whether in a rural, modified peri-urban or urban setting – results in decreased ecosystem services, leading to disease and increased health risks for all of the species in the ecosystem, including plants, wildlife, livestock and humans. Climate change and loss of ecosystem resilience, furthermore, are paving the road for the emergence of new conservation and health challenges.

Approximately 70 percent of the 1.5 billion poorest people depend on livestock and natural resources. Poor sanitary and biosecurity conditions, in densely populated human-dominated, modified multispecies environments, provide opportunities for pathogens to more easily transit among potential host species. Subsistence bushmeat consumption, wildlife farming and wildlife trade bring people into contact with a great diversity of forest-dwelling birds, mammals and reptiles, exposing people to novel pathogens.

In a globalized world where pathogens can travel the world in a day, emerging diseases, especially those affecting humans, livestock or wildlife, can have large negative socio-economic implications. Impacts can be severe for public health, livelihoods and food security, as well as for international trade and tourism.

Since 2006, FAO has been a key partner in a series of interministerial conferences on animal, avian and pandemic influenza. The 2007 conference (New Delhi, India) addressed the larger issue of emerging infectious diseases at the animal-human-ecosystem interface. The Hanoi Declaration adopted at the 2010 conference reaffirmed that to be capable of addressing high-impact disease threats that arise at this interface (e.g. H5N1 highly pathogenic avian influenza and pandemic [H1N1] influenza), health systems require: international and regional cooperation, national political commitment, intersectoral collaboration, timely and transparent communication and capacity building. As part of the Food Chain Crisis Management Framework, FAO has recently developed a One Health programme to guide the implementation of FAO's work in animal health by drawing on expertise from many disciplines, including forestry, fisheries, natural resources and law.

Approximately 60 percent of emerging infectious diseases of humans are zoonotic. Of these, 70 percent originate from wildlife (often forest dwelling). These pathogens and diseases include HIV/AIDS, Nipah, Hendra and West Nile viruses, as well as ebola, rabies, severe acute respiratory syndrome (SARS) and monkey pox. It is clear that the solution to the challenge of emerging infectious diseases relies on collaboration and integration of multiple disciplines and partners including ministries of forestry and environment, agriculture and health. While more science is necessary to understand the complex relationships among disease emergence, transmission and ecological systems, science alone is not the solution. It is also essential to address the social and cultural dimensions of societies where issues concerning livestock, wildlife, humans and entire ecosystems intersect. Changes in thinking and behaviour must be encouraged, and future decision-making must be cognizant of the repercussions of poor natural resource management and their implications for civilization.

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