A healthier world

*International Innovation* takes a closer look at ‘One Health’ – a movement that states the interconnectedness of animal, human and environmental health, and champions a coordinated, collaborative and multidisciplinary approach to tackle the global health threats facing us today.

‘ONE HEALTH’ AS a concept is described by the One Health Initiative as: “the collaborative effort of multiple disciplines – working locally, nationally, and globally – to attain optimal health for people, animals and the environment”. Although there are many different definitions, at the core of all of them is cross-sector collaboration between animal, human and environmental health communities; One Health aims to improve the health and wellbeing of living organisms and the environment that supports them by preventing risks that originate at their interface. There is already a powerful case for implementing One Health as a new paradigm to solve many of the critical health problems facing our world – and the progress made so far suggests this may not be a too distant reality.

WHY NOW?
The past decade has seen One Health gain considerable momentum, accelerated by emerging infectious zoonoses such as dengue fever and West Nile virus. Recent zoonotic epidemics of animal origin have highlighted the need for more extensive collaboration at the animal-human-ecosystem interface and represent a public health priority that should not be underestimated; around 60 per cent of all pathogens that cause human diseases are of animal origin, and this figure rises to 75 per cent within the context of recently emerged infectious diseases.

The 21st Century is an era of innovation. However, many of these changes are making One Health increasingly important. As humans are moving into new geographic areas and occupying new ecosystems, contact with animals is increasing. These interactions are further driven by rapid population growth, new trends in animal production and changing patterns of wildlife populations. Furthermore, the increase in international trade and travel means that humans, animals and animal products are moving more freely across borders.

Due to all of these contributing factors, pathogens have increasing opportunities to adapt and jump across species, leading to a growing number of infectious diseases. For example, primates in tropical climates have been intermittently transmitting the Ebola virus to humans since 1976 and, in 1999, mosquito-borne West Nile virus broke out in New York, once again demonstrating the links between human and animal health. This led to the creation of the US National Center for Emerging and Zoonotic Infectious Diseases.

Rapid environmental changes are also exacerbating the problem. Climate change and human adaptations to land are disrupting ecosystems, causing human health issues to rise. Changes in land use, large food production units and water pollution have all
created new threats to the health of both animals and humans. Deforestation is depriving several species of their natural habitats, which, in many cases, has consequences for humans – for example, widespread deforestation means that in some regions Nipah virus-infected fruit bats are moving closer to villages, where they can transmit this deadly virus to humans, either directly or through their reservoir host, pigs. If we are to accurately predict the movement of disease through ecosystems, we require the expertise of different sectors. Collaboration between veterinary, medical and public health professionals is crucial to fully understand the impact of environmental change on animal and human health.

A WORLD OF OPPORTUNITY

Animals are not purely vectors for disease in the One Health concept; they are also useful models for comparative research. Many animals suffer from some of the same chronic diseases as humans, including heart disease, cancer and diabetes. Studying naturally occurring human diseases in animals can be extremely valuable and underlies some of medicine’s greatest advances.

Solutions to many of the public health problems facing us may therefore lie in the unifying concept of One Health. Its synergistic approach has the power to accelerate biomedical research and expand the world’s scientific knowledge base. This knowledge can be used to improve medical education, clinical care and the effectiveness of public health strategies. Properly applied, One Health could protect millions of lives in the 21st Century and beyond.

ONE HEALTH IN PRACTICE

The highly pathogenic avian influenza virus H5N1 (also known as ‘bird flu’) highlights the need for One Health. In 1997, 18 people were infected. Six of these died, and since then a further 245 deaths have been reported. The response to this outbreak emphasised the importance of considering the interplay between human, animal and environmental health, and brought with it important lessons about how humans can better respond to future zoonoses: in this instance, different interest groups with different understandings of the problems presented by avian flu put forward different solutions – and subsequently found themselves competing for policy attention and funding. However, united by the need to control the outbreak, the different players proceeded to work together to improve human and animal health systems and develop pandemic contingency plans, attesting the importance of coordination.

Following this, the World Bank and the United Nations (UN) released the Fifth Global Progress Report on Animal and Pandemic Influenza, which emphasised the significance of a One Health approach for pandemics. Instead of trying to control zoonoses through emergency initiatives, the report highlighted the need to build the capacity of One Health to respond to a wide range of disease threats, both existing and emerging.

This has been taken on board by many of the world’s leading public health agencies, including the World Organisation for Animal Health (OIE), which advocates collaboration amongst sectors to work at the animal-human-ecosystem interface to safeguard global animal and human health when zoonoses occur. Similarly, the Animal Health and Veterinary Laboratories Agency in the UK is involved in various international projects which follow a One Health strategy.

UPCOMING EVENTS

2nd Annual One Health International Symposium
19-21 June 2014, Liverpool, UK

3rd Global Risk Forum One Health Summit
5-8 October 2014, Davos, Switzerland

3rd International One Health Congress
15-18 March 2015, Amsterdam, The Netherlands
One Health Initiative: The One Health Initiative aims to forge inclusive partnerships between physicians, veterinarians and environmental scientists. It recognises that human, animal and environmental health are inextricably linked and hopes to use this understanding to promote the health of all species. Its members include the American Medical Association (AMA), American Veterinary Medical Association (AVMA), US Centers for Disease Control and Prevention (CDC), the United States Department of Agriculture (USDA) and the US National Environmental Health Association (NEHA), as well as over 700 scientists.

One Health Commission: In June 2007, the AMA adopted a One Health resolution. The AVMA subsequently established a One Health initiative task force, which became the commission. Today, the commission works to engage health science professionals in One Health and promote the importance of the approach.

One Health Global Network: OHGN connects all of the One Health initiatives in a global network and facilitates coordination and communication between them.

www.onehealthcommission.org

www.onehealthglobal.net

www.onehealthinitiative.com

One World, One Health: One Last Chance?

Going forward, One Health can only become more powerful. The Expert Meeting on One Health Governance and Global Network in 2011 produced a comprehensive plan for the future of the movement, and the World Bank is presently working to more clearly demonstrate the cost effectiveness of such an approach, after publishing its economic benefits in 2012. The One Health vision will soon become a reality with the help of a formal alliance between the World Health Organization (WHO), the Food and Agriculture Organization of the UN (FAO), and OIE. A joint concept note published by these three organisations clarifies their responsibilities and objectives in One Health, prioritising rabies, zoonotic influenza viruses and antimicrobial resistance.

However, a wider sea change is still needed in the way we all think about global health. The successful synergy between animal, human and environmental health will undoubtedly improve the health of our world.

“One Health asks that we recognise the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies, and the biodiversity essential to maintaining healthy environments and functioning ecosystems.”

– The Manhattan Principles