
One Health

Briefing Note

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This briefing note sets out to explain why One Health has become a critical concept for everyone who is engaged in promoting sustainable agricultural development and food security. The links between human health, animal health and environmental health have been a blind spot for a long time but recent pandemics are bringing us to action.

The Concept

One Health recognises the inter-relationships between human health, animal health, wildlife and the environmental and provides a framework for promoting greater inter-disciplinary cooperation and collaboration.

The FAO refers to One Health as a vision to safeguard human and animal health, to reduce disease threats and to ensure a safe food supply through effective and responsible management of natural resources. CDC in the USA uses a One Health approach by working with physicians, veterinarians, ecologists, and many others to monitor and control public health threats and to learn about how diseases spread among people, animals, and the environment, as 6 out of every 10 infectious diseases in humans are spread from animals.

History and Background

Since the 1800s scientists have noted similarities between animal and human health. Animal models are often used for medical research and, for ethical reasons, veterinary research has often been ahead of human health research. Many older people in rural communities remember the local vet providing unofficial first aid however it is only in recent years that there has been growing recognition of the need for greater collaboration across public health and animal health disciplines. In 2010, the United Nations and the World Bank made a clear commitment to One Health when they published the “Fifth Global Progress Report on Animal and Pandemic Influenza.”. Increased concerns about the threat from emerging zoonotic diseases, avian influenza



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in particular, have led to increased emphasis on pandemic preparedness through a One Health approach. This report recommended that rather than focusing on controlling avian influenza through emergency initiatives, countries and regional bodies should build One Health capacity to respond to a broad range of emerging and existing disease threats.

In February 2011 the 1st International One Health Congress was held in Melbourne, Australia. More than 650 people from 60 countries and a range of disciplines came together to discuss the benefits of working together to promote a One Health approach. In addition to understanding the interdependence of humans, their livestock, wildlife and the environmental, attendees agreed that it is important to include other disciplines, including economics, social behaviour, and food security and safety. In July 2011, the first One Health Conference in Africa was held in South Africa.

The One Health Concept is growing in importance as a basis for collaboration and action on human, livestock and environmental health. The FAO has teamed up with the WHO and the World Organisation for Animal Health (OIE) in a global strategic plan to achieve food and health security by strengthening veterinary and animal production systems so they can better monitor disease threats and care for the health of livestock and the environments they are raised in.

Zoonotic Diseases

According to FAO over 60% of the current and emerging pathogens that affect human health originate in wildlife or arrived when we started domesticating livestock. Zoonotic diseases are those that can pass between animals and humans, and include anthrax, brucellosis, rabies. Recent years have seen an apparent increase in the emergence of new zoonotic diseases, such as H1N1 and H1N5 influenzas. The threat of zoonotic diseases is strongest in developing countries where people live in close proximity to their livestock and are in contact with wildlife through hunting and animal to human arthropod vectors.

The FAO has identified several key drivers of zoonotic disease emergence and transmission. Firstly, globalization, changes in land usage, and climatic changes are implicated when diseases invade a new geographic area.

Secondly, disease emergence is facilitated by mass rearing of animals as animal production intensifies. The high numbers of animals per farms and per units, and the geographic clustering of industrial production plants, provides fertile grounds for pathogens to turn more host-aggressive, enhancing both disease spread and persistence.

Thirdly, zoonotic disease emergence is associated with interspecies jumps of pathogens. This often involves wildlife living in natural ecosystems, and results from human and livestock encroachment of forests and game reserves, exploitation of wildlife for food and recreation, degradation of rich ecosystems, and expansion of urban cities. Humans have little, if any, natural immunity to these diseases which, together with local migrations and international air travel, creates the potential for global pandemics.

FAO also identifies different stakeholders having different concerns regarding food safety, health, security, and wellbeing. Poor people are primarily concerned with existing disease burdens, which are considered more important than pandemic risks, however rich communities are immune from these, witness the recent salmonella outbreak in Germany that was linked to cucumbers. Disease impacts are complex and vary between stakeholders, including disruptions to financial, human, natural, and physical assets.

Antimicrobial Resistance

One Health has a key role to play in addressing antimicrobial resistance. In its 2011 report Tackling antibiotic resistance from a food safety perspective in Europe, the WHO stated that “resistance in the food-borne bacteria Salmonella and Campylobacter is clearly linked to antibiotic use in food animals, and food-borne diseases caused by such resistant bacteria are well documented in people.” Widespread fungicide use on crops impacting on anti-fungal resistance in human and animal health.

Antimicrobial resistance spreads between species: chimpanzees in Uganda show resistance to several of the antimicrobials used in health centres adjacent to chimpanzee habitats and the UCD Veterinary Schools has found resistance to some antibiotics in migrating wildfowl, which could spread resistance to other wildlife populations along migration routes.

Implications for Development Agencies

Building global disease resilience is a task that must involve more than vets and medics. It depends on more credible efforts towards sustainable agriculture and rural development, environmental stewardship, and socio-economic progress. For agencies involved in supporting smallholder agriculture and livestock production greater attention needs to be paid to livestock health. Healthier and unstressed livestock are less likely to transmit zoonotic and food-borne diseases; owning healthy livestock can increase access to animal food sources and reduce risk of malnutrition; and improved livestock production can benefit household incomes and subsequent access to health and education services.

In many countries, developing and developed alike, the public bodies that deliver services continue to focus on their own specific disciplines and fail to acknowledge the inter-disciplinary nature and challenge of a One Health approach. All too often policy and practice across agriculture, food and health do not complement, or even acknowledge, each other. Development agencies and researchers can test One Health approaches in the field and provide data to demonstrate the benefits inter-disciplinary thinking and action. Work over the last 10 years has clearly demonstrated the benefits of using an inter-disciplinary approach to address child undernutrition, which can now be expanded to reduce transmissible disease risks through One Health.

Today Dr Delia Grace will present the work of the International Livestock Research Institutes work on One Health in developing countries and we will talk about Irish initiatives to promote inter-disciplinary thinking and action on One Health. I hope you find the day both interesting and inspiring.

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