

What is One Health?

“One Health” has been defined many ways. At its core, One Health fosters a collaborative approach to issues that intersect human, animal and environmental health.

Although One Health is not a new concept, it has become more important in recent years. Interactions among people, animals, and the environment continue to change. The expansion of human and animal populations, changes in climate and land use, and increased international travel and trade provide opportunities for disease spread. Approximately 75% of recently emerging infectious diseases affecting humans are diseases of animal origin; approximately 60% of all human pathogens are zoonotic. Zoonotic diseases are those that are spread between people and animals.

One Health obviously includes the health professions. But, it also includes wildlife specialists, anthropologists, economists, environmentalists, behavioral scientists, and sociologists, among others. One Health embraces the idea that complex problems at the human-animal-environmental interface can best be solved through multidisciplinary communication, cooperation, and collaboration.

One Health is increasingly being acknowledged by national and international institutions as the most constructive approach to address complex issues at the animal-human-environmental interface.

The History of One Health

A German scholar from the mid 1800’s, Rudolf Virchow, who came from a farming family, was an early proponent of One Health. He said, “Between animal and human medicine there is no dividing line—nor should there be. The object is different but the experience obtained constitutes the basis of all medicine.”

During the last 3 decades, approximately 75 percent of emerging infectious diseases among humans have been zoonotic diseases, which can be transmitted from animals to people. This has encouraged modern proponents of One Health. In the 1980’s, epidemiologist Calvin Schwabe called for a unified human and veterinary approach to combat zoonotic diseases, providing the modern foundation for One Health.

The concept was advanced further when, in 2004, the Wildlife Conservation Society hosted a symposium that brought together an international group of human and animal health experts to discuss shared diseases among human, wild animal, and domestic animal populations. This symposium introduced a set of priorities for an international and interdisciplinary approach to combat joint threats to human and animal health.

In 2007, The American Veterinary Medical Association and the American Medical Association adopted a vision supporting the concept of One Health and formed the One Health Initiative task force. The task force brought together U.S. human and animal health agencies, medical doctors, and veterinarians. In addition, the National Strategy for Pandemic Influenza and its Implementation Plan led to several International Ministerial Conferences. In 2008, the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), the World Organisation for Animal Health (OIE), the United Nations Children's Fund (UNICEF), the World Bank, and the United Nations System Influenza Coordination (UNSIC) came together to develop a document titled, "Contributing to One World, One Health™-A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface.

In 2010, the United Nations and the World Bank recommended adoption of One Health Approaches in the document: "Fifth Global Progress Report on Animal and Pandemic Influenza." The 1st International One Health Congress was held in Melbourne Australia in February 2011. Representing a range of disciplines, more than 650 people from 60 countries gathered to discuss the benefits of working together to promote a One Health approach. Going beyond the importance of understanding the interdependence of human, animal, and environmental health, attendees supported the inclusion of disciplines such as economics, social behavior, and food security and safety. The first One Health Summit, sponsored by the Global Risk Forum, was held in Davos, Switzerland in February 2012.

One Health has also gained ground throughout the U.S. Government, led by the President's new initiatives for coordination and collaboration on the Global Health Security Agenda. The Centers for Disease Control and Prevention (CDC) established its One Health office in 2009. USDA Animal and Plant Health Inspection Service established its One Health Coordination Center in 2012. U.S. Sen. Al Franken (D-Minn.) introduced "The One Health Act of 2016" which, if passed, would require federal agencies to create a comprehensive strategy—the National One Health Framework—to address zoonotic diseases (diseases that can be transmitted between people and animals).

What is Veterinary Service's role in One Health?

Veterinary Services (VS) has a rich history of applying veterinary public health principles to protect human health. For years, VS has controlled several serious zoonotic diseases in livestock and poultry, effectively protecting the public from transmission of these diseases.

Two major efforts initiated in the early to mid-1900's involved bovine tuberculosis (TB) and brucellosis. In addition to being transmissible from contact with live animals and carcasses, both of these diseases can also be transmitted through milk. At the turn of the century, about 20 percent of all human TB cases were caused by *Mycobacterium bovis*, the organism responsible for bovine TB. From 1930-1941, the United States reported approximately 29,600 human cases

of brucellosis. Today, due to the cooperative Federal, State and industry efforts to eliminate these diseases in cattle, both cattle and human cases have decreased dramatically. However, the need for cross-discipline cooperation to combat these and other zoonotic diseases continues.

The Centers for Disease Control (CDC) and VS routinely coordinate and partner with other Federal and State animal and human health partners and stakeholders to prevent zoonotic diseases of public health importance. The CDC and USDA collaborate on a number of well-established and important zoonotic disease surveillance programs including bovine spongiform encephalopathy, trichinellosis, enteric zoonoses, brucellosis, bovine tuberculosis, and influenza.

One Health partners at international, national, and state levels work together to address a variety of issues that affect animal, human and environmental health. For example, in 2006, the threat of a pandemic due to the highly pathogenic avian influenza A H5N1 virus led to federal interagency and global coordination of prevention and response activities. In 2008, the USDA and the FAO signed a framework agreement to address important global agriculture issues such as world hunger and plant and animal diseases.

In 2012, in the United States, several cases of variant influenza were detected in people, the majority of whom had contact with pigs at exhibitions. Influenza is a respiratory disease caused by type A influenza viruses that regularly cause outbreaks in pigs. Influenza is present at low levels in pigs throughout the world, and is monitored by the voluntary USDA Swine Influenza Surveillance Program, although it is not a reportable or regulated disease.

Influenza viruses almost always remain infectious only within their host species, but at times infections may spread to other species. Influenza viruses in pigs can occasionally infect people, and human influenza viruses can infect swine. The term "variant" is used to refer to viruses that are genetically different from what is usually isolated from humans. The description is written as a small "v" after the virus subtype, for example, H3N2v. More information on these variant viruses is available from CDC at <http://www.cdc.gov/flu/swineflu/>.

The 2012 variant influenza outbreak triggered further collaboration of Federal and State animal health and public health, academia and industry to study the outbreak and to develop educational materials and guidance to minimize spread of influenza between people and pigs at fairs. These materials are available from the National Association of State Public Health Veterinarians at <http://nasphv.org/documentsCompendiaZoonoticInfluenza.html>. Information about influenza in swine is available at https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information/ct_swine_health_home.

VS and One Health in the Future

VS recognizes the importance and the need for the involvement of the animal health sector to take a prominent role in One Health issues. VS is building on past successes in safeguarding

American agriculture to address the complex health relationships between both domestic and wild animals and humans, and their shared environment.

Various units throughout VS are involved in addressing One Health issues. One Health can be found in all of the work that VS does. Since 2012, the One Health Coordination Center has provided direct support to VS business units to strengthen multi-sector responses to a variety of zoonotic diseases and other complex issues that intersect the animal-human-environmental interface. For more information on VS One Health activities, contact the VS One Health Coordination Center at VS.OHCO@aphis.usda.gov