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Linking human and animal health

By Laura H. Kahn, Bruce Kaplan and Thomas P. Monath
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This election season voters must decide which candidate will improve the nation's security and well-being. It is troubling, then, that a clear and present public health and security issue has been all but ignored by the campaigns – protecting citizens against pandemic disease threats and bioterrorism.

Anthrax, avian influenza (known as “bird flu”), SARS (severe acute respiratory syndrome) and viral hemorrhagic fever are well known to many voters – not the least of which because two of these examples may be used by terrorists seeking to conduct bioterrorism attacks on American soil.

What many citizens and policy-makers may not realize, however, is that all of the above diseases, and many more, are transmitted from animals to humans, and are dubbed “zoonotic diseases” for their ability to jump species. And how the federal government and public health departments around the country respond to such possible pandemic disease threats is critical to the safety of millions of people.

For example, when the first outbreak of SARS occurred in China in late 2002, the Chinese government was slow to acknowledge the outbreak and respond appropriately, and ultimately thousands were unknowingly infected with the disease – many of whom had traveled by air around the world, spreading the disease beyond China's borders. Hundreds died, and public health experts saw this example as an ominous warning.

In addition, since the strain of bird flu classified as H5N1 re-emerged in Southeast Asia in 2003, thousands of birds were infected, and more than 200 people died. Governments have been forced to kill millions of birds, particularly poultry, to try and quell the spread of disease.

Indeed, H5N1 is viewed by many scientists as one of the worst possible pandemic threats we may face, potentially more deadly than the strain of avian flu that killed 58 million people around the world in 1918-19.

While the United States can't control how other countries respond to global pandemics that may ultimately infect or otherwise impact Americans, we can be better prepared at all levels of government to

respond to a major zoonotic disease outbreak or bioterrorist attack.

And so the presidential campaigns have a unique opportunity to spread an important message about how we can better protect the homeland.

But how should policy-makers and health professionals respond? Most important, the U.S. government must encourage far greater collaboration between human and veterinary medicine to both recognize and respond to emerging infectious disease threats.

Human beings for millennia have depended upon and lived with animal species, and both have derived mutual benefits: food, companionship, work service, even recreational sports. However, both have suffered from similar and frequently identical diseases that have severe public health, security, and even economic implications.

This is not a new or radical idea. It has been around for centuries and recognized by medical visionaries. For example, in the 20th century a veterinary scientist and eminent public health expert, Dr. Calvin Schwabe, coined the term “One Medicine” – now called “One Health” – to describe how human and veterinary medicine could offer better health by joining forces.

Implementing the One Health concept is more than a marriage of convenience – it is a union of utter necessity. A cornerstone of public health and the prevention and control of possible epidemics such as bird flu, SARS or West Nile virus is effective surveillance and early detection of diseases.

Moreover, medical advances from understanding basic biological principles to developing vaccines, therapeutic drugs, and more effective surgical procedures for different species would be realized more expeditiously.

Such collaboration works. As an example, Rolf Zinkernagel and Peter C. Doherty, a physician and veterinarian immunologist, respectively, discovered how both human and animal bodies distinguish normal cells from virus-infected cells – an advance that benefited humans and animals alike. For their achievement, they were awarded the 1996 Nobel Prize in Physiology or Medicine.

And earlier in the 20th century, the control of rabies in animals – a critical public health worry at the time – was largely due to collaborative veterinarian-physician interactive knowledge. The development and utilization of effective vaccinations for dogs and cats as a barrier against human disease, surveillance of wildlife (such as bats, foxes, raccoons and skunks, which continues today) with appropriate public communication alerts, vaccinations and joint physician-veterinarian public education campaigns dramatically reduced risks from this deadly disease.

An all-inclusive approach wherein physicians, veterinarians and other

allied health scientists at every government level – federal, state and local, plus at research institutions – working side-by-side and sharing each other's respective areas of expertise, would provide many breakthroughs for improving and protecting the lives of America's citizens. It is time this issue received the attention it deserves.

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