Antimicrobial resistance (AMR) is one of the greatest threats to society, human and animal health, and economic prosperity.

According to the Centers for Disease Control and Prevention, antibiotic-resistant bacteria cause at least 2.8 million infections and 35,000 deaths in the United States every year. Many more die from complications of an antibiotic-resistant infection. These drug-resistant “superbugs” can also harm the ecosystem and cost multibillions annually in medical costs and economic losses.

A national institute at Iowa State University, supported by the College of Veterinary Medicine and College of Agriculture and Life Sciences, is working to combat this growing public health threat.

The National Institute for Antimicrobial Resistance Research and Education (NIAMRRE) has the single goal of addressing antimicrobial resistance from a One Health perspective.

“Antimicrobial resistance is a global health priority for both national and international governments,” said Dr. Paul Plummer, NIAMRRE executive director. “It touches each of us in our daily lives. This institute provides a great resource for the entire country as we work to build strong, collaborative research and educational programs to mitigate this risk.”

In 2018, Iowa State (in collaboration with the University of Nebraska-Lincoln, University of Iowa, University of Nebraska Medical Center at Omaha and Mayo Clinic) was selected as the host of the national institute by the Association of Public and Land-grant Universities and the Association of American Veterinary Medical Colleges. The present membership includes almost forty members representing academia, industry, and other stakeholders, including six US colleges of veterinary medicine. In total, the network includes over 1,000 researchers and academicians working in fields that impact antimicrobial use, stewardship and resistance. These researchers include basic, translational, and applied scientists in veterinary medicine, agriculture, environmental health, public health, medicine, economics, and social sciences.

“We need to identify gaps of knowledge we have to answer and build together to answer the really big questions,” Plummer said. “We must do that while bridging human, animal, plant, and environmental concerns.”

NIAMRRE works with its various partners to not only map expertise and capacities in the AMR arena nationwide and identify research priorities and funding opportunities, but to also advance efforts related to AMR education and communication. The institute recently launched a One Health AMR workshop designed to facilitate communication about AMR and the use of antimicrobial agents among different One Health sectors. NIAMRRE is also working to identify best practices in the science communication of AMR to lay audiences.

“We then collaborate with experts to identify complex AMR topics for general consumption and provide resources to end users,” Plummer said. “Cross-disciplinary participation helps to bridge resource and knowledge gaps and create sustainable progress.”

Plummer knows this is a big task but feels NIAMRRE is up to fulfilling the role of knowledge broker.

“We are intentionally creating space for each of the One Health disciplines to work together on education efforts and research related to antimicrobial resistance,” he said. “We encourage other institutions that are not currently involved to consider joining the effort.”

For more information on NIAMRRE go online at https://www.niamrre.org/.

Two key members of NIAMRRE at Iowa State University are Drs. Qijing Zhang and Paul Plummer.