A-grade report card on superbugs in Australian animals

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The first nationwide survey of antibiotic resistance in disease-causing bacteria in Australian pets and livestock has found low rates of resistance to critically important drugs–comparing very favourably with other countries around the world.

The findings will be reported at a one-day symposium today marking the official launch of the University of Adelaide's Australian Centre for Antimicrobial Resistance Ecology (ACARE).

The new Centre will, for the first time, bring together surveillance of both human and animal antimicrobial resistance across Australia, as well as research into the development of resistance and new ways of controlling disease in both humans and animals. Its research will have a One Health focus (meaning human, animal and environmental health).

"This survey result is an A-grade report for Australian agricultural industries and animal health practitioners," says Professor Darren Trott, project leader of the Australia-wide survey and inaugural Director of ACARE. "It shows that concerns over animal antimicrobials contributing to the development of antibiotic resistance in humans may be somewhat overemphasised with respect to the risk posed by Australian meat and other livestock products.

"However, there is no way we should be resting on our laurels. We did find some resistance, and we know this is a developing global problem.

"We now have an Australian benchmark showing where we are currently with respect to disease-causing bacteria in animals, and we need to ensure ongoing surveillance and continued vigilance, with good prescribing practice across livestock and pets by our veterinarians — just as we need in human medicine. Our new Centre will fill an essential gap, attempting to keep us ahead of this looming health issue."

The new Centre will be a national reference laboratory focusing on the antimicrobial resistance in Gram-negative bacteria, a group which includes many of the serious human-disease causing bacteria for example Escherichia coli. It will establish a national collection of bacterial samples as a key research tool for local, national and international research groups.

At its core will be the national antimicrobial resistance surveillance programs, with surveys undertaken on an annual basis reporting antimicrobial susceptibility to major Gram-negative disease-causing bacteria in both humans and animals. There will also be industry-sponsored programs focused on surveillance of antimicrobial resistance in bacteria found in healthy livestock.

"Complementing the national surveillance programs and harnessing the knowledge gained from the antibiotic-resistant bacterial collection, ACARE researchers in the University of Adelaide's School of Biological Sciences are developing novel antimicrobial agents towards major human bacterial pathogens," says Centre Deputy Director Dr Christopher McDevitt.

The Centre will bring together leading bacterial disease experts from the School of Biological Sciences with animal health experts from the School of Animal and Veterinary Sciences. The Centre will forge collaborations with Murdoch University, which undertakes surveillance in Gram-positive bacteria such as Staphylococcus aureus, and other key

national and international antimicrobial research groups, as well as work closely with state and federal government departments responsible for human and animal health.

"These findings reported today will be the first of the animal component of 'One Health' national antimicrobial resistance surveillance, one of the seven key objectives of the National Antimicrobial Resistance Strategy released in May 2015 by the federal Departments of Health, and Agriculture and Water Resources," says Professor John Turnidge, Adjunct Professor at the University of Adelaide and Senior Medical Advisor to the Australian Commission on Safety and Quality in Health Care. "The first report of the human component, AURA 2016, was released by the Australian Commission on Safety and Quality in Health Care last week. This landmark report has identified some significant issues in the use of antimicrobials and antimicrobial resistance in human health, and identifies areas for improvement."

The first nationwide survey of antimicrobial resistance in disease-causing bacteria from companion and production animals, was initiated and funded by animal health company Zoetis to support antimicrobial stewardship activities by establishing a baseline of resistance levels in Australia. Veterinary diagnostic laboratories distributed throughout the nation sent strains of bacteria isolated from animal infections to the University of Adelaide for antimicrobial resistance testing.

Main findings included:

- Uniformly low rates of resistance (