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Antimicrobial resistance of *Escherichia coli* isolated from piglets in South Eastern Australia

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Introduction: The Australian pig industry commonly uses antimicrobials for prevention of diarrheal diseases in neonatal and weaner piglets caused by *Escherichia coli. E. coli* is ubiquitous in both humans and animals. Surveillance of *E. coli* resistance from both healthy and diseased piglets is necessary to anticipate any potential threat to both animal and public health. The aim of this study was to assess resistance to antimicrobials used in human medicine in *E. coli* isolated from healthy and clinically sick piglets.

Methods: A snapshot survey of 22 commercial piggeries located in South Eastern Australia: New South Wales n=9; Victoria n=10; and South Australia n=3 was conducted from September 2013 to May 2014. Faecal samples were collected from each herd (10 from pre-weaned and 40 from post-weaned piglets). Each sample was categorised according to a simple faecal consistency score (1 = firm and shaped, 2 = soft and shaped, 3 = loose, 4 = watery) and according to detection of β-haemolytic *E. coli*. A total of 325 *E. coli* isolates were tested for resistance to 27 antimicrobials using the BD Phoenix Automated Microbiology System (BD Diagnostics).

Results & Discussion: The highest prevalence of resistance was to tetracycline (72%), with moderate prevalence of resistance to trimethoprim-sulfamethoxazole (45%) and chloramphenicol (37%). Resistance to cefazolin (8%), cefoxitin (5%) and ceftriaxone (3%) was less frequent, although continued monitoring for emerging resistance to these antimicrobials is essential, considering their importance in human therapeutics.

Implications: Multi-drug resistant isolates (including drugs important for human health) observed in this study require further investigation. Surveillance of *E. coli* resistance from both healthy and diseased piglets is necessary to anticipate any potential threat to both animal and public health. In addition, monitoring of pigs at slaughter and pork products is needed to develop an integrated public health surveillance system.

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