

A15

Investigation of Methicillin-resistant *Staphylococcus aureus* and Extended-spectrum beta-lactamase-producing Enterobacteriaceae in pigs

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Background and objectives: Antibiotic resistance is a major public health concern. Extended-spectrum β -lactamase (ESBL)-producing *E. coli* strains and livestock-associated *Staphylococcus aureus* (LA-MRSA) are widely distributed among pigs. They seem to play a more important role in conventional farms compared to organic farms.

Materials and methods: A literature search was performed in PubMed and Web of Science. The keywords pig(s), MRSA, ESBL, antibiotic resistance, Germany, organic farming and livestock were used.

Results: Two cross-sectional studies had investigated the occurrence of MRSA and ESBL in livestock in conventional as well as organic farms in Mecklenburg-Western Pomerania. There were MRSA-positive pig farms in all tested districts, the organic farms tested MRSA-negative. Most conventional pig farms and all organic farms tested positive for ESBL. Mostly fattening pigs as well as suckling and weaned piglets were affected by MRSA.

Conclusion: The cohort studies conducted in the past did not monitor more than one fattening period. Therefore, conventional and organic pig farms will be examined for the presence of resistance marker genes in a longitudinal study over a period of twelve months. The burden of ESBL-producing Enterobacteriaceae as well as methicillin-resistant *S. aureus* in pig farms in Mecklenburg-Western Pomerania will be determined. In conjunction a mobile PCR based approach for quantification of resistance marker genes will be developed. According to the results, a categorization scheme and intervention strategies will be developed.