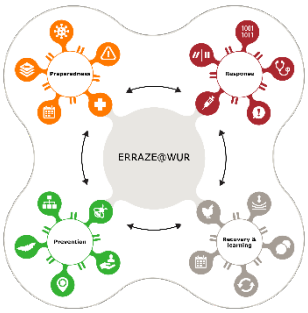
Paradigm Shifts for Global One Health

Greater resilience requires transformation and integration

Book of Abstracts

International symposium
23-25 April 2024
Wageningen, The Netherlands



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Editors: Joukje Siebenga, Erika van Gennip, Roosmarie Vriens, Wageningen University & Research

DOI: 10.18174/655105

2024, Wageningen, Stichting Wageningen Research, P.O. 338, 6700 AH Wageningen, The Netherlands
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Results and lessons from ten years One Health livestock surveillance in the Netherlands (2013-2023)

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Objectives
Livestock can be a reservoir of various zoonotic pathogens and thus plays an important role in their dissemination. Examples are Salmonella, Campylobacter and Shiga-toxin producing E. coli. Humans can become infected by these pathogens through direct contact with livestock, contact with a contaminated environment and consumption or handling of contaminated food. In addition to zoonoses, antimicrobial resistance (AMR) is another important public health threat for which livestock plays a role in transmission. Surveillance of zoonotic pathogens and AMR in livestock is vital to obtain information about prevalence and characteristics of these pathogens. In addition, EU member states are obligated to collect and report data on zoonotic agents to the European Food Safety Authority. In the Netherlands, it was decided to report annual prevalence data based on active surveillance in one specific livestock sector per year. The objectives of the surveillance program are to monitor trends in the prevalence and types of zoonotic pathogens in livestock and people in contact with livestock, to analyze risk factors and to provide input data for risk assessment.
Approach
Since 2013 this program has been carried out as a collaboration between RIVM, NVWA and WFSR. Up to 2023, eight livestock sectors were investigated. In addition to sampling of the animals, samples were also collected from livestock farmers, family members and employees. Pathogens were selected based on importance for public health and relevance in the specific livestock sector. Campylobacter, ESBL-producing E. coli, Salmonella and STEC have been analysed in all or most of the investigated livestock sectors.
Results
The highest Campylobacter prevalence was found in cattle (dairy, beef and veal calves) with farm level prevalence of 85-95%. ESBL-producing E. coli was most prevalent in poultry. The prevalence of ESBL-producing E. coli was equal in participating humans and the general Dutch population. The prevalence of Salmonella was highest in finisher pigs while low in ruminant sectors, with the exception of veal calves. STEC prevalence was highest in small ruminants. In asymptomatic human participants from dairy goat and sheep farms, STEC carriage was high (5-10%) and on four farms human and animal isolates matched in serotype and stx genes.
Conclusions
This surveillance program has shown the variations in prevalence of multiple zoonotic bacterial species as well as antibiotic resistant E. coli among different livestock sectors. The program has provided important baseline information for, among others, source attribution and risk assessment.

Keywords: surveillance, livestock, zoonoses, antimicrobial resistance