Comparison of antibiotic resistance in *Escherichia coli* from clinical diagnostic submissions and isolates of healthy broilers, turkeys and calves from surveillance and monitoring systems in Germany and France

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The effectiveness of antibiotics has been reduced in last decades due to mainly human activities. Surveillance and monitoring systems are key elements to collect and assess the trends of antibiotic resistance (ABR). Livestock data on ABR are traditionally collected from bacterial populations of clinical and non-clinical isolates. Resistance data on non-clinical isolates are based on the Decision 2013/652/EU in Europe. Different standards, approaches (epidemiological vs. clinical), laboratory methods and methodologies are applied to collect ABR data on clinical isolates. Lack of harmonization between data types (clinical vs. non-clinical isolates) prevents the data comparison.

The Normalized Resistance Interpretation (NRI) method was applied to circumvent the lack of AMR data harmonization between and within countries. Analyses were performed to identify (a) associations between resistance to antibiotics and the data type variable per animal category within countries and (b) higher resistance proportions between countries per drug and animal category.

Within countries, higher resistance proportions were found in clinical isolates to: gentamicin (in broilers from France and in calves from Germany and France), nalidixic acid (in calves from France and Germany) and tetracycline (for calves from France and Germany). In contrast, a higher probability of resistance in non-clinical isolates was encountered for tetracycline (in broilers and turkeys from Germany and France) and to gentamicin (in turkeys from Germany). Between countries, higher resistance levels of tetracycline in broilers, turkeys and calves were encountered in France while nalidixic acid (in broilers, turkeys and calves), gentamicin (in turkeys) and tetracycline (in calves) showed higher resistance proportions in Germany.

It seems that the higher presence of resistance in one data type (i.e. clinical or non-clinical isolates) is strongly associated with the relationship between the animal species and the antibiotic. The NRI identifies the wild-type distribution providing approximate epidemiological cut-offs that allow comparing quantitative results from different non-harmonized ABR systems. This method might be regularly used in veterinary medicine and in One Health studies until international harmonisation of ABR in clinical isolates is achieved.