Antimicrobial resistance of zoonotic and commensal bacteria in Europe: The missing link between consumption and resistance in veterinary medicine

The emergence of resistance in food animals has been associated with the consumption of antimicrobials in veterinary medicine. Consequently, monitoring programs have been designed to monitor the occurrence of antimicrobial resistant bacteria. This study analyses the amount of antimicrobial agents used in nine European countries from 2005 to 2011, and compares by univariate analysis the correlations between consumptions of each of the following antimicrobial classes: tetracycline, penicillins, cephalosporins, quinolones and macrolides. An overview of resistance in zoonotic and commensal bacteria in Europe focusing on Salmonella, Escherichia coli, Campylobacter sp. and Enterococcus sp., during the same period of time based on monitoring programs is also assessed. With the exception of cephalosporins, linear regressions showed strong positive associations between the consumption of the four different antimicrobial classes. Substantial differences between countries were observed in the amount of antimicrobials used to produce 1kg of meat. Moreover, large variations in proportions of resistant bacteria were reported by the different countries, suggesting differences in veterinary practice. Despite the withdrawn of a specific antimicrobial from “on farm” use, persistence over the years of bacteria resistant to this particular antimicrobial agent, was still observed. There were also differences in trends of resistance associated to specific animal species. In order to correlate the use of antimicrobial agents to the presence of resistance, surveillance of antimicrobial consumption by animal species should be established. Subsequently, intervention strategies could be designed to minimize the occurrence of resistance.

General information
Publication status: Published
Organisations: National Food Institute, Division of Epidemiology and Microbial Genomics, Autonomous University of Barcelona
Contributors: Garcia-Migura, L., Hendriksen, R. S., Fraile, L., Aarestrup, F. M.
Pages: 1-9
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Veterinary Microbiology
Volume: 170
Issue number: 1-2
ISSN (Print): 0378-1135
Ratings:
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.54 SJR 1.291 SNIP 1.251
Web of Science (2014): Impact factor 2.511
Web of Science (2014): Indexed yes
Original language: English
Keywords: Consumption, Antimicrobial resistance, Salmonella, Escherichia coli, Campylobacter, Enterococci
DOIs: 10.1016/j.vetmic.2014.01.013
Source: dtu
Source ID: n:oai:DTIC-ART:elsevier/441758858::38430
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review