Comparing antimicrobial exposure based on sales data - DTU Orbit (24/12/2018)

Comparing antimicrobial exposure based on sales data

This paper explores the possibilities of making meaningful comparisons of the veterinary use of antimicrobial agents among countries, based on national total sales data. Veterinary antimicrobial sales data on country level and animal census data in both Denmark and the Netherlands were combined with information about estimated average dosages, to make model calculations of the average number of treatment days per average animal per year, at first based on the assumption that the treatment incidence is the same in all species and production types. Secondly, the exposure in respectively animals for meat production and dairy and other cattle (excluding veal and young beef) was estimated, assuming zero use in the dairy and other cattle, and thirdly by assuming respectively 100% oral and 100% parenteral administration. Subsequently, the outcomes of these model calculations were compared with treatment incidences calculated from detailed use data per animal species from the national surveillance programmes in these two countries, to assess their accuracy and relevancy. In Denmark and in the Netherlands, although the computed antimicrobial exposure would seem to be a reasonable estimation of the exposure for all animals as a whole, it differs significantly from the measured exposure for most species. The differences in exposure among animal species were much higher than the overall difference between the two countries. For example, the overall model estimate of 9 treatment days per year for Denmark is a severe overestimation of the true use in poultry (i.e. 3 days), and the overall model estimate of 13 treatment days per year for the Netherlands is a severe underestimation of the true use in veal calves (i.e. 66 days). The conclusion is that simple country comparisons, based on total sales figures, entail the risk of serious misinterpretations, especially if expressed in mg per kg. The use of more precise model calculations for making such comparisons, taking into account differences in dosages and in farm animal demographics, only slightly reduces this risk. Overall model estimates are strongly influenced by animal demographics and a very inaccurate indication of the true differences in exposure, per animal species. To get an appropriate certainty about the true differences in antimicrobial exposure between countries it is an absolute necessity to have reliable information about the use per animal species.

General information
State: Published
Organisations: National Food Institute, Division of Epidemiology and Microbial Genomics, Wageningen IMARES, Utrecht University
Contributors: Bondt, N., Jensen, V. F., Puister-Jansen, L. F., van Geijlswijk, I. M.
Pages: 10-20
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Preventive Veterinary Medicine
Volume: 108
Issue number: 1
ISSN (Print): 0167-5877
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 2.26 SJR 1.144 SNIP 1.31
Web of Science (2017): Impact factor 1.924
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.2 SJR 1.249 SNIP 1.361
Web of Science (2016): Impact factor 1.987
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.1 SJR 1.282 SNIP 1.177
Web of Science (2015): Impact factor 2.182
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.37 SJR 1.27 SNIP 1.407
Web of Science (2014): Impact factor 2.167
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 2.49 SJR 1.264 SNIP 1.529
Web of Science (2013): Impact factor 2.506