



Harmonisation of antimicrobial use monitoring

Development of monitoring methods depending on goals to attain

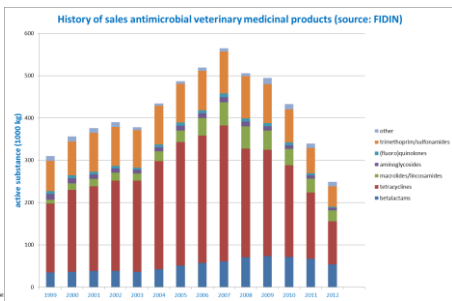
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Development of antimicrobial drug use monitoring in the Netherlands

- 1995: Salesdata
 - mass antimicrobial drugs sold per year per pharmacotherapeutic group (kg/tonnes), related to total living animal weight (mg/kg)
- 2001: Sensordata:
 - antimicrobial consumption in treatment days per animal per year (ADDD/y) in a survey of farms
- 2011 : Complete sector monitoring in ADDD/y in 3 sectors
 - pigs, veal calves, poultry for benchmarking purposes
- 2012: cattle (dairy cows amongst others) was connected
 - Revision of veal calf sub-group definitions
- 2013: turkey joined, revision of cattle sub-group definitions
- 2014:



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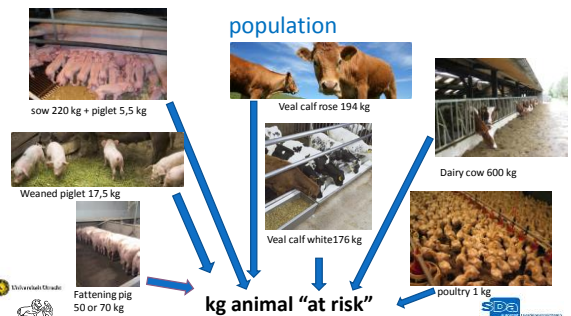
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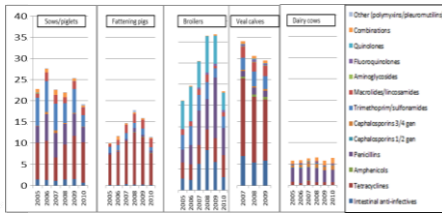
VMP amount



population



Sensordata: antimicrobial consumption in treatment days per animal per year (ADDD/y) in a survey of farms (n= 30 -100) (2005-2010)



www.maran.wur.nl

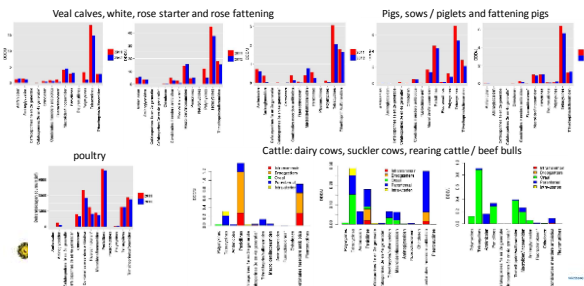


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Complete sector monitoring in ADDD/y in 4 husbandry sectors: pigs, veal calves, poultry, and cattle for benchmarking purposes



Calculation of treatable kg's

- Per VMP dosing = ml/kg or g/kg or pieces/kg
- consumption of VMP (ml or g or pieces) / dose (ml/kg, g/kg, pieces/kg) * duration (days) = treatable kg*days
- (dose_(min) → treatable kg*days_(max), dose_(max) → treatable kg*days_(min))
- Time consuming
- Differences between countries

Limits encountered

- Tonnes: shift in applied antibiotics may cause changes in tonnes which can be misinterpreted as decreasing or increasing consumption
- Sample surveys may be limited in representativity
- Benchmarking necessitates finetuning of categories, which may compromise overall year to year comparisons and interpretation of development and prognoses
- dosing issues for individual VMP authorizations

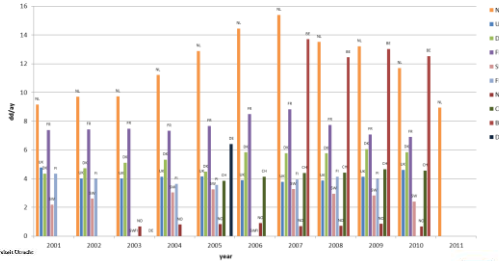


Benchmarking of countries

- Sales data (tonnes sold) converted to treatable kg (mean factor per pharmacotherapeutic group)
- Population data from Eurostat



daily dosages per animal year in Europe



Benchmarking of countries

- First ESVAC initiative: salesdata (tonnes sold) related to kg meat production and dairy cows
- National data, readily available
- Constant data in time
- Identical parameters
- Kg of antimicrobial active substances
- Population correction unit

Veterinary antimicrobial drug salesdata in Europe 2007 (in mg active substances/kg biomass)

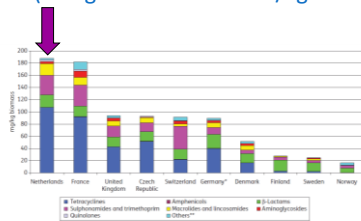
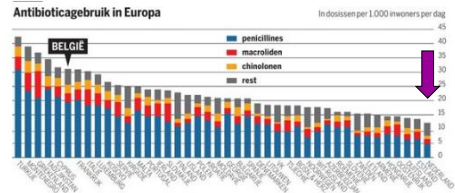


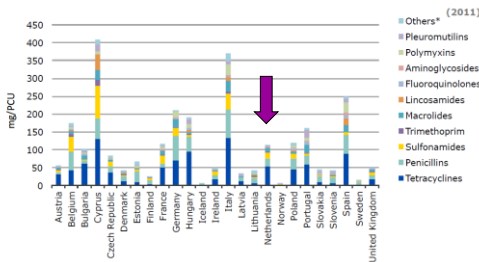
Figure 1. Amounts, in mg, of veterinary antimicrobial agents sold in 2007 per kg biomass of pig meat, quality meat and cattle meat produced plus estimated live weight of dairy cattle. *2005 data. **The substances included vary from country to country.

Human antimicrobial drug consumption 2012



Teveel aan antibiotica maakt Belgen kwetsbaar

Figure 9. Sales for food-producing species, including horses, in mg/PCU, of the various veterinary antimicrobial classes, by country¹, for 25 countries in 2011 and for 20 countries in 2010



Benchmarking of DK and NL for fattening pigs

- Application of the 2012 Danish system to the Dutch farm-data (with some VMP excluded) revealed almost identical use:
 - Sow/piglets:
 - DK ADD-list = 12.4 ADD/y vs NL DDD-list = 14.3 DDD/y
- VMP dosing (Danish values applied)
- Mean of consumption data per farm (NL) or totals per country?

New parameter: national ADDD

- Generic dosing (per animal species) = mg/kg (human WHO system)

active substance (kg) / dose_{24h}(mg/kg) = treatable kg*days*10⁶
 (divided by total mass bodyweight (in 10⁶kg): ADDD per animal per year)

- Per husbandry sector: treatable kg / total mass bodyweight
- National: \sum treatable kg / \sum total mass bodyweight



Other things to consider

- Per animal per year
 - mean of whole sector
 - Looking for a lasting parameter for trends analysis and international benchmarking
 - Looking for a parameter indicative for consumption and predictive for resistance development
- VS**
- per day per 1000 animals (*1000/365)
 - mean of individual farms (small farms have same weight as large farms)



Thank you

Next goal: harmonizing methods for European monitoring!

