FEDERAL MINISTRY OF FOOD AND AGRICULTURE

# German Antibiotic Minimisation Concept

## Evaluation of its effectiveness

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### Background

One of the main action points in the veterinary field of the first German Antimicrobial Resistance Strategy DART was the establishment of an Antibiotic Minimisation Concept for fattening farms keeping calves, beef cattle, weaned piglets, fattening pigs, broilers or turkeys. It was introduced with the 16th amendment of the German Medicinal Products Act (AMG) and came into force as of April 1st 2014. Its three goals are:

Goal 1: Reduction of antibiotic use in livestock husbandry

Goal 2: Promotion and improvement of responsible and prudent use of antibiotics to treat diseased animals in order to contain the risk of AMR development and dissemination

Goal 3: Facilitation of more effective control especially in livestock farms

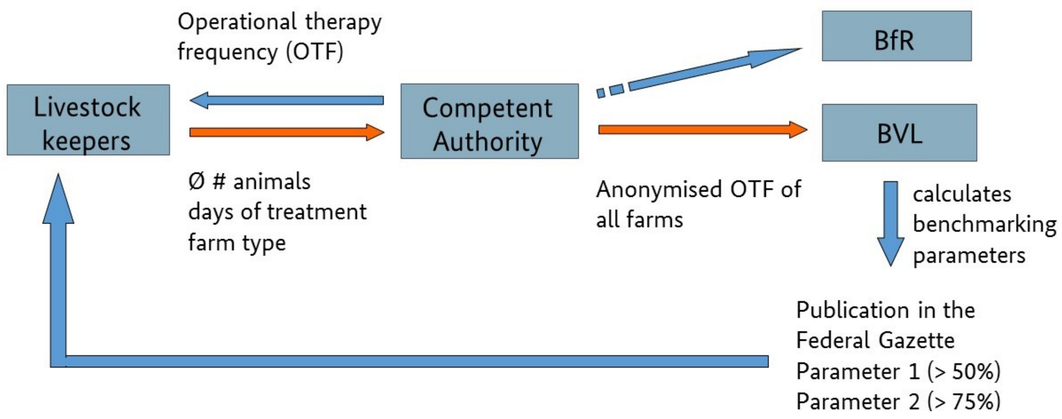


**Fig. 1: Semi-annual reporting of farm data, calculation and feed-back of operational treatment frequency and nationwide parameters.**

### Reporting and use of data

The antibiotic minimisation concept obliges the concerned livestock keepers to semi-annually report their antibiotic use and their stock numbers including all changes. Should the indicator "operational treatment frequency" calculated with the reported data for each farm and stock type exceed national benchmarks, at a first level "Parameter 1" (median) the livestock keeper has to assess reasons for the elevated antibiotic use and options for reducing it in collaboration with a veterinarian. If exceeding "Parameter 2" (3rd quartile of all therapy frequencies), he has to present a written plan of measures for the reduction of his antibiotic use to the competent authority. In case this plan is considered inadequate, the competent authority can order changes and amendments.

According to § 58f AMG the reported data may only be used by the competent authority for control and enforcement purposes, i.e. not for reporting, scientific evaluation, etc.

The only exception is the one-time use of the anonymised data for the evaluation of the effectiveness of the antibiotics minimisation concept. Accordingly, this is the first time the officially collected data of antibiotic use in German fattening farms are analysed centrally to assess if the three goals of the underlying legislation have been met.

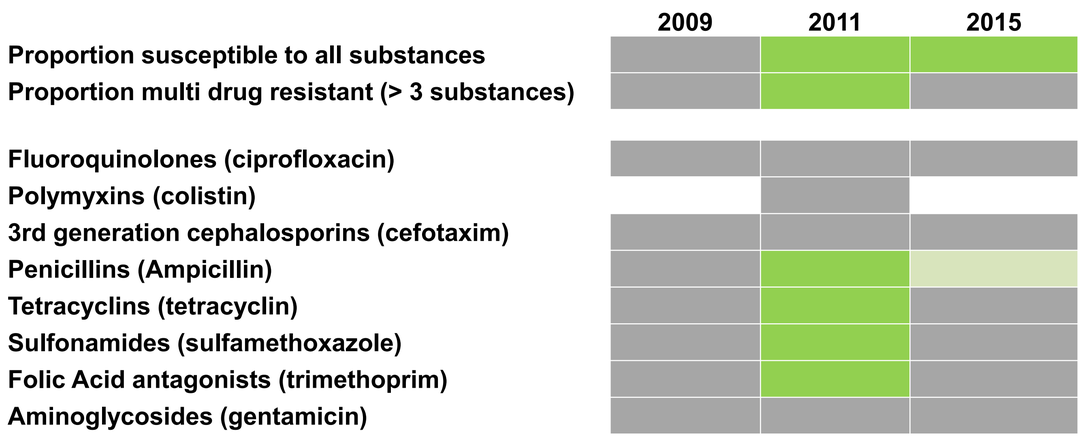


**Fig. 2: Comparison of resistance of isolates of commensal *E. coli* from fattening pigs in the years 2009, 2011 and 2015 to those of 2017. Green symbolizes a significant positive development (Increase in the proportion of susceptible isolates /decrease of the proportion of resistant isolates) in isolates of 2017. Grey fields indicate no difference. Pale green fields differ at a level of p < 0.1.**

### Systematic approach to the evaluation

The evaluation report is based on four different surveys:

- Assessment of antibiotics sales and use data,
- Assessment of resistance data in bacteria from the food chain and in animal pathogens,
- A report of the 16 German Länder on their perceptions and experiences,
- A nationwide study on the experiences of farmers and veterinarians. This latter study indicates a rise in awareness for the topic of antibiotic use and resistances in farmers and veterinarians.

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### Results

The amount of antibiotics supplied by pharmaceutical companies and wholesalers to veterinarians was reduced by 57 % between 2011 and 2017. In the period 2014 to 2017, this reduction was distinctly higher compared to the preceding period.

Antibiotic use was reduced in all six animal categories and in all three farm size categories. Antibiotic use for fattening calves, beef cattle, weaned piglets, fattening pigs, broilers or turkeys was reduced by 94 t (equaling 31,6 %) in the period of the second half-year 2014 to the second half-year 2017. In parallel, the semi-annual operational treatment frequencies decreased significantly. The highest reductions could be achieved for weaned piglets and fattening pigs.

**→ Goal 1 was met.**

The spectrum of classes of antibiotics used did not change throughout the observation period, i.e. the use did not shift towards antibiotic classes considered critical to public health.

Commensal *E. coli* of all concerned animal categories showed a general trend towards increased percentages of fully sensitive isolates.

**→ Goal 2 was met.**

The provisions of the 16th AMG-Amendment sufficiently enabled the competent authorities to fulfil their tasks within the implementation of the Antibiotics Minimisation Concept. Stakeholders and authorities considered the implementation a considerable effort, but appreciated the availability of nationwide comparable indicators and the increased awareness of all involved.

**→ Goal 3 was met.**

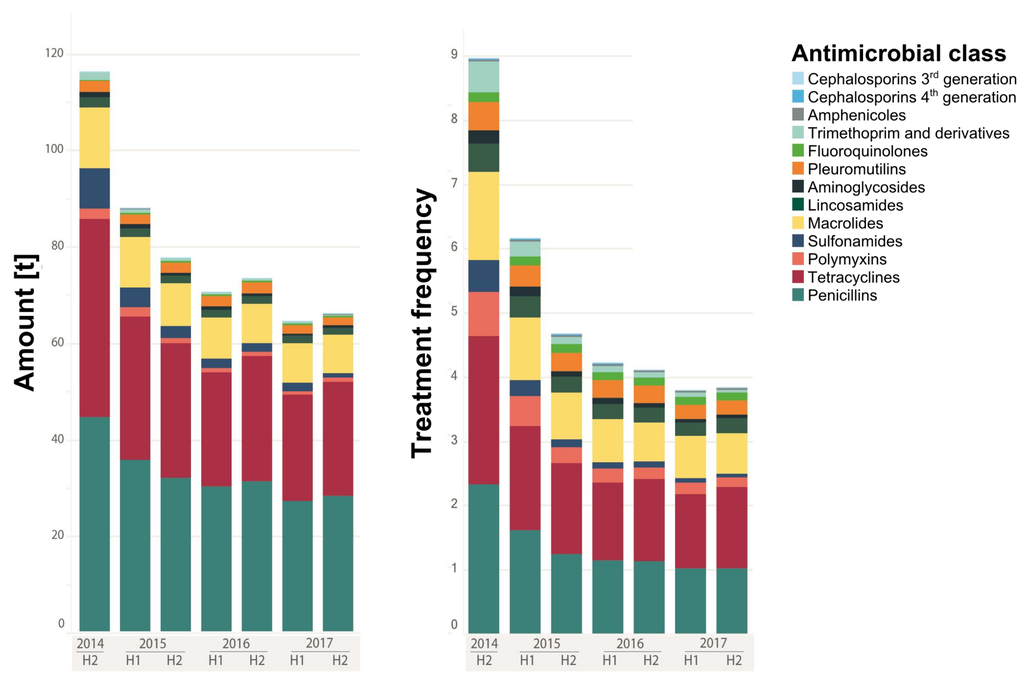


**Fig. 3: Development of the amount of antibiotic use and therapy frequency in fattening pigs.**

### Some interesting details

Farm size influenced the operational therapy frequency in all animal categories. It was higher in large farms than in small and medium sized farms, indicating that animals kept in large farms are treated more often than animals in smaller farms.

Reduction of antibiotic use was achieved by reducing use of first line substances (penicillins, tetracyclins, sulfonamides) as well as of the highest priority critically important classes macrolides and polypeptides. Fluorchinolones and 3rd/4th generation cephalosporins were constantly used at very low levels and therefore could contribute little to the overall reduction of antibiotic use in fattening animals.

The use of long acting/one shot products remained constantly at ca. 2 t (< 1 % of the total antibiotic use). In conclusion, the use of these products was not increased in order to lower the operational therapy frequency. Their power to influence the calculated indicator was overestimated in public discussions.

### Conclusions

The German Antibiotic Minimisation Concept using the indicator treatment frequency and abstaining from set reduction targets effectively reduced antibiotic use without promoting use of critically important antibiotics. It contributed to awareness raising and prudent use of antibiotics.

Antibiotic use data give valuable additional information to antibiotic sales data. Analysing treatment frequencies is a useful way to assess antibiotic treatment independent of the different antibiotic classes and differences in dosages.

Take a picture to download the full evaluation report

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