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Wegener, Henrik Caspar

*Publication date:*  
2013

*Document version*  
Publisher's PDF, also known as Version of record

*Citation for published version (APA):*  
Wegener, H. C. (2013). *Quality of antibiotic use in the food chain in Denmark*. Abstract from OECD Workshop 2013, Utrecht, Netherlands.

## Quality of antibiotic use in the food chain in Denmark

Henrik Caspar Wegener, MSc, MPA, PhD  
*Technical University of Denmark*

### **Abstract**

In the early nineties a number of events led to significant public and political attention to the issue of antimicrobial resistance in the food chain in Denmark; these were:

- A clear establishment of the epidemiological links between human Salmonella infections and Salmonella in Danish poultry and pig production.
- The emergence of multidrug resistant Salmonella infections in humans and concerns over indiscriminate use of tetracyclines for prophylactic purposes in pig production.
- Detection of vancomycin resistant enterococci (VRE) in food animals associated with the use of avoparcin as a growth promoter in food animals.

This led to the establishment of a national programme for integrated monitoring of antimicrobial resistance in animals, food and humans as well as monitoring of antimicrobial usage in animals and humans in 1995 (the DANMAP programme).

The increased access to high quality data on antimicrobial resistance levels and antimicrobial usage, in the farm-to-patient chain, and the close collaboration between experts from different sectors in the DANMAP programme, helped scientists develop and communicate consensus messages about the actual levels of risks (risk assessment) and to jointly identify risk factors, and intervention strategies, which could be used as a basis for intervention (risk management) by the authorities.

Since 1995, a wide range of interventions to contain antimicrobial resistance in the food chain has been implemented in Denmark. This includes:

- Banning certain modes of use e.g. AGP/NTA's and routine prophylaxis in food animals.
- Developing and communicating prescriber and end user guidelines.
- Restricting or banning critically important drugs.
- Implement thresholds for certain AMR pathogens in food.
- Enhancing or enforcing non-antibiotic disease preventive strategies.
- Enforcing prescriber and end user guidelines by usage monitoring, "yellow card system" and audit.
- Reducing financial and certain marketing incentives.

As a consequence of these interventions, the volume of antimicrobial usage in food animals has remained significantly below the 1994 level up until this day and resistance levels in some bacterial pathogens and indicator bacteria in the food animal reservoirs and in the food supply has been reduced.

Summaries

**Greatest opportunities and challenges**

- Opportunities: Access to good quality data on antimicrobial resistance and antimicrobial usage in the chain from primary food production to human patient can be used to inform risk managers, and given appropriate political circumstances, may lead to interventions, which can reduce levels of antimicrobial resistance in the food chain.
- Challenges: There are a number of barriers to the collection and sharing of data on drug usage. This hinders the development and evaluation of evidence based interventions to improve quality of use.

**Specific policy issues impacting topic**

- Barriers to the collection and sharing of antimicrobial usage data in agriculture should be removed.

**References**

DANMAP - the Danish Integrated Antimicrobial Resistance Monitoring and Research Programme. <http://www.danmap.org/>