



# Reduced and Responsible

## Policy on the use of antibiotics in food-producing animals in the Netherlands

In the period 2008-2011 the outline of a successful policy for a substantial reduction and a more responsible use of antibiotics in the livestock industry was drafted as a reaction to the persistent high level of antibiotic use in the livestock sector and public concerns about any transfer of antimicrobial resistance from livestock to humans. The policy was set up as a public-private partnership. Stakeholders in the major livestock production sectors - pigs, broilers, veal and cattle – together with the Royal Netherlands Veterinary Association (KNMvD) took responsibility for effective measures, facilitated and supervised herein by the national government. Key elements in the approach, which was strongly linked to the production chain quality systems, were: (1) transparency and benchmarking of antibiotic use per herd and per veterinarian, (2) improvement of herd health with clear responsibilities for farmer and veterinarian and (3) reduction targets for livestock production as a whole: -20% in 2011 and -50% in 2013 with reference to the amount of effective substance sold in 2009 (later set at -70% in 2015 by government decree).

In 2011 the Health Council of the Netherlands presented its recommendations on “Antibiotics in food animal production and resistant bacteria in humans”. These became the cornerstone of the Dutch policy for responsible use and the basis for a revision of the veterinary medication guidelines. *With this, human healthcare risks became pivotal for Dutch antibiotics policy in livestock production.*

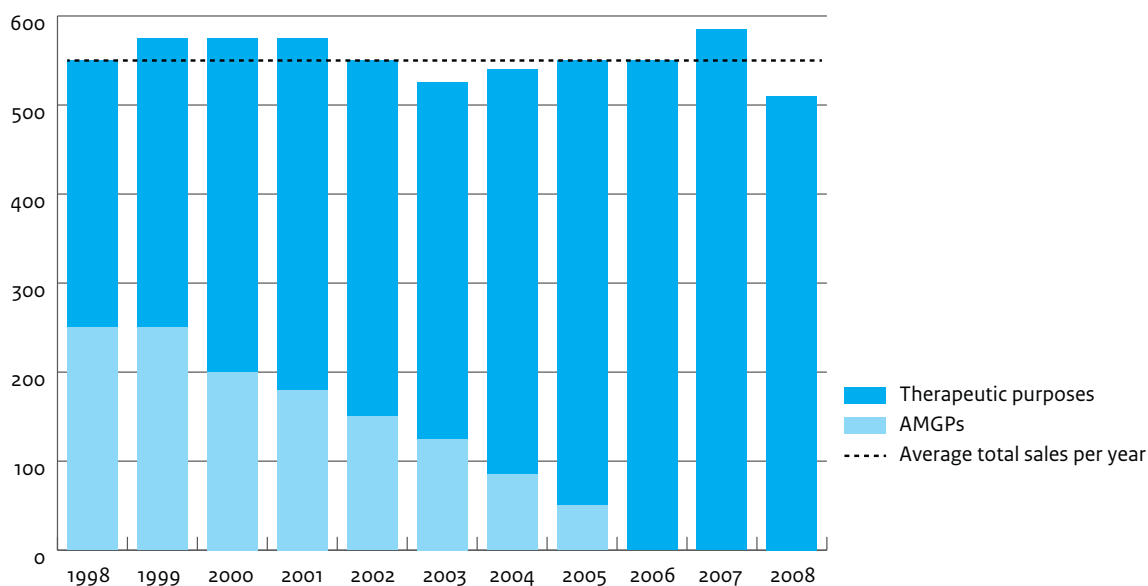
By 2012 the sales of veterinary antimicrobials had already dropped by 50%, so the target set for 2013 was achieved one year earlier. Moreover, the sales of third and fourth generation cephalosporins had dropped by more than 90%.

<sup>1</sup> <http://www.gezondheidsraad.nl/en/publications/prevention/antibiotics-food-animal-production-and-resistant-bacteria-humans>

## Livestock production in the Netherlands under a looking glass

The Netherlands is a very densely populated country with approximately 17 million inhabitants concentrated on an area of 34,000 km<sup>2</sup> (500/km<sup>2</sup>). Moreover, the inhabitants share this area with 4 million cattle, 12 million pigs, 100 million poultry, 1.5 million sheep and goats and about 325,000 horses. When such concentrated livestock production is in people's backyard, its license to produce will always be under close scrutiny. Dutch livestock production has already been subject to debate on environmental, welfare and disease issues for a long time. In the second half of the past decade, Q-fever in particular with its substantial number of cases of illness among the human population living in the vicinity of infected goat farms, has intensified the public and political debate about the risks of animal production for the human population. In the same period, the discovery of livestock-associated MRSA focused the attention on the risks of the persistently high level of antimicrobial use in food-producing animals, even after the ban on antimicrobial growth promoters (AMGPs) in the EU, which came into effect on 1 January 2006 (figure 1).

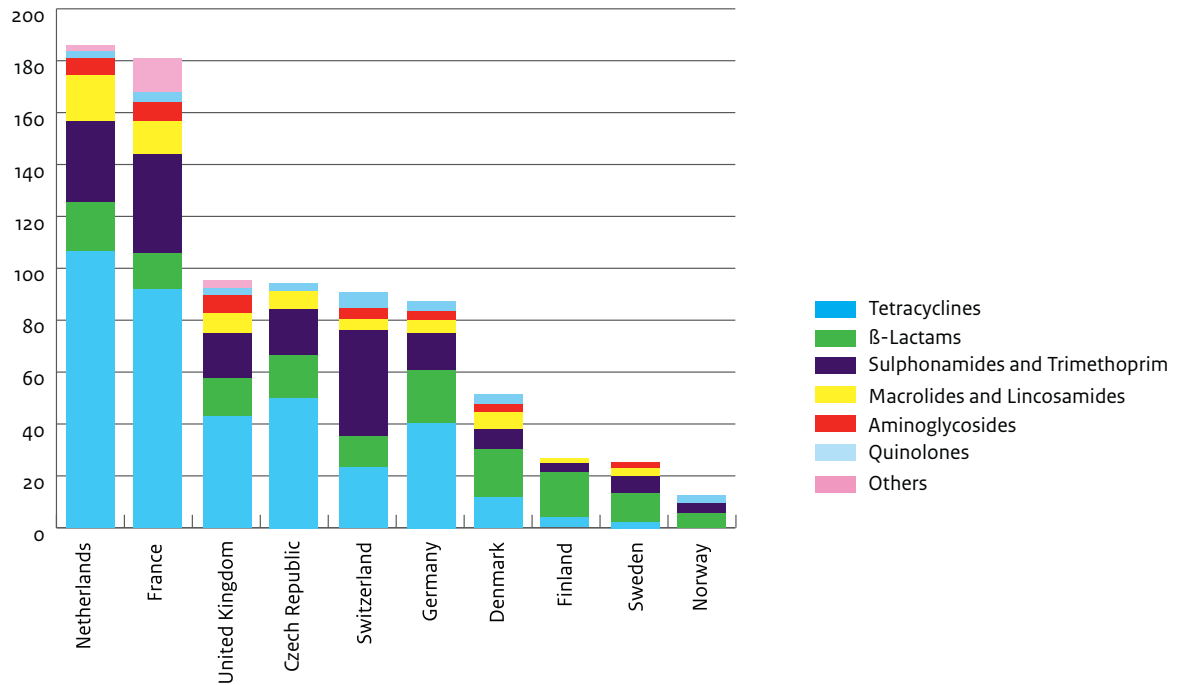
Figure 1. Sales of antibiotics in tonnes of active substance in the Netherlands before and after the ban on AMGPs (source: FIDIN-LEI)



In a European comparison by ESVAC<sup>2</sup> the sales of veterinary antimicrobial agents corrected for population size turned out to be higher than in the other EU Member States participating at that time (figure 2).

<sup>2</sup> [http://www.ema.europa.eu/docs/en\\_GB/document\\_library/Report/2011/09/WC500112309.pdf](http://www.ema.europa.eu/docs/en_GB/document_library/Report/2011/09/WC500112309.pdf)

Figure 2. Standardised sales of antibiotics for food-producing animals, including horses (source: ESVAC).



## Use of antibiotics in human healthcare and in livestock production

On the other hand, the Netherlands is a renowned example of effective infection prevention and containment of antimicrobial resistance in public healthcare. The low level of antimicrobial resistance encountered in Dutch hospitals relies substantially on the restrictive and selective prescription and use of antibiotics in public healthcare.

Indications of transfer of multi-resistant strains of bacteria - first LA-MRSA and subsequently ESBLs - from animals to humans and the sometimes high level of contamination of food-producing animals and food thereof with these bacteria, gave rise to substantial medical, public and political concern about the public health risks of antimicrobial resistance originating from livestock production. The discrepancy in practices between human and veterinary antimicrobial usage resulted in a strong appeal to the livestock industry for a restricted and more responsible use of antibiotics. The livestock industry and the KNMvD responded quickly in the context of their push for sustainability.

## Policy development

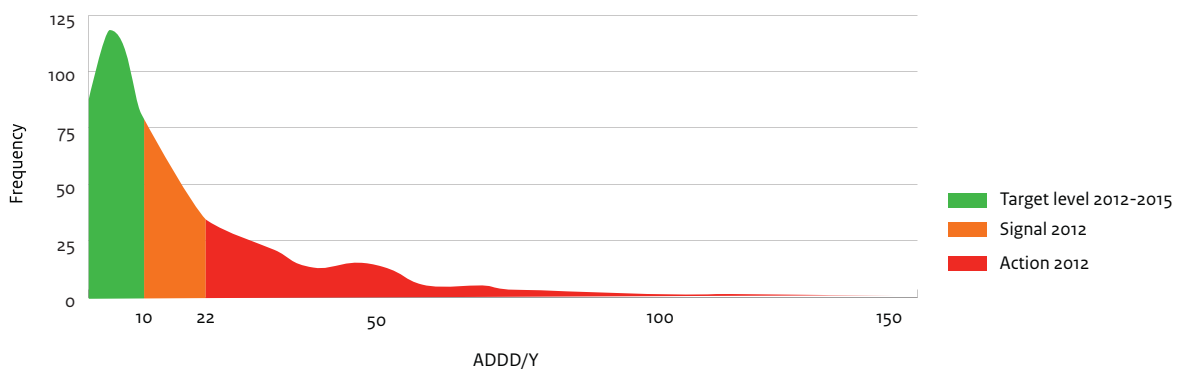
### Outline of reduction policy

In the period 2008-2011 the outline of the successful reduction and responsible use policy was drafted. It was set up as a public-private partnership, with stakeholders from the major livestock production sectors - pig, broiler, veal and cattle production – and the KNMvD taking responsibility for effective measures, supervised and facilitated herein by the national government. Key elements in the approach, which was strongly linked to the already operational production chain quality systems, were:

- Transparency and benchmarking of antibiotic use per herd and per veterinarian;
- Improved herd health, clear responsibilities in herd health management and in prescription/delivery of antibiotics by:
  - mandatory herd health plans;
  - one contracted veterinarian per herd;
  - mandatory periodical veterinary herd inspections;
- Clear reduction targets for livestock production as a whole: -20% in 2011 and -50% in 2013 with reference to the amount of effective substance sold in 2009. (The target was set at -70% in 2015 by government decree in 2012).

For monitoring and benchmarking purposes recording of herd use data in central databases became mandatory under public law in 2011 for the four major livestock sectors and the same applies to the herd health plan. In 2010 an independent body, the Netherlands Veterinary Medicines Authority (SDa), was established for monitoring and benchmarking the use of antibiotics at the level of herd and veterinarian, for supervising the follow-up of recommendations for reduction of use, and for quality control of the data recording systems. The SDa developed a methodology for reduction of use based on the distribution of herds according to the number of animal-defined daily doses per year (ADDD/Y). This is computed per livestock sector or per type of production (e.g. starters vs. finishers) within a sector.<sup>3</sup> Figure 3 shows a typical example of such a distribution. According to the SDa-methodology, herds in the red zone (top 25%) have to take measures immediately, in cooperation with their veterinarian, in order to reduce their antimicrobial use substantially. Herds in the orange zone receive a message that their antimicrobial use needs attention. Herds in the green zone are on the level projected for 2015, although pursuit of a lower use is desirable. Government and production sectors agreed to report 'heavy users' to the inspection authority. A similar approach, to become operational in 2014, will be followed for benchmarking antimicrobial prescription by individual vets.

Figure 3. Frequency distribution of ADDD/Y for farms with sows and piglets (SDa, 2012).



<sup>3</sup> <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0077525>

### **Responsible use**

In 2011 the Health Council of the Netherlands presented its recommendations on 'Antibiotics in food animal production and resistant bacteria in humans'<sup>4</sup>. These recommendations were entirely adopted by the government and became the cornerstone of the Dutch responsible use policy. *With this, human healthcare risks became pivotal for Dutch antibiotics policy in livestock production.*

The most relevant recommendations were:

- ESBLs, not LA-MRSA, constitute the major resistance problem; policy should focus on containment of ESBL-related risks;
- Veterinary use of third and fourth generation cephalosporins in particular should therefore be substantially reduced;
- Systematic use of beta-lactam antibiotics, fluoroquinolones and aminoglycosides in livestock should be banned;
- The veterinary use of colistin (and a number of other antibiotics) should be phased out in order to keep it as a last-resort antibiotic for human health care;
- Off-label use should be limited to exceptional cases, as was originally intended;
- New antibiotics should be reserved for human health care purposes.

Policy measures based on these recommendations are:

- Preventive use was prohibited by adaptation of the label texts;
- A number of guidelines for veterinary use of antibiotics is being drafted by the KNMvD, e.g. a general guideline for responsible use of antibiotics in livestock and specific guidelines for drying off dairy cows, for veal calves during the start-up period, for streptococcus infections in pigs and for the start-up phase of broilers;
- Medication guidelines have been adapted in line with the recommendations: antibiotics that do not cause resistance became first choice, no specific ESBL/AmpC risk antibiotics (and colistin) became second choice, critically important antibiotics for human health care became third choice and a number of last-resort antibiotics were entirely excluded from veterinary use. The use of second choice antibiotics has to be substantiated by the sensibility of the pathogen or by other means. Third choice antibiotics are only to be used on an individual basis and after a sensibility test for alternatives;
- A legal basis was created for mandatory sensibility testing before using third choice antibiotics.

Professional medication guidelines and guidelines for veterinary use are in principle binding: deviations have to be well-founded. If not, this can be reason for disciplinary action.

In addition to the measures mentioned to limit the use of third and fourth generation cephalosporins production, chain quality systems in the pig industry banned the use of these antibiotics entirely and so did the dairy production quality system concerning the use of these compounds in drying-off infusion products. The veal sector voluntarily reduced the use of these antibiotics.

### **Additional legal measures to enforce compliance with responsible use**

In response to cases of irresponsible, and sometimes illegal, practices concerning prescription and use of antibiotics encountered when pig, veal or broiler herds and the veterinarians responsible for herd health were spot-checked by the inspection authority, additional statutory measures have been adopted. Examples include the introduction of a permit to possess raw materials for the production of antibiotics (from which keepers of livestock are excluded) and a permit system for the delivery of antibiotics by vets.

<sup>4</sup> <http://www.gezondheidsraad.nl/en/publications/prevention/antibiotics-food-animal-production-and-resistant-bacteria-humans>

The measure experienced as most drastic however was the ‘administration by veterinarians only’ regulation, which is expected to enter into force by March 2014. According to this regulation, in principle only veterinarians are allowed to prescribe and administer antibiotics to livestock. However, under certain conditions livestock keepers are permitted to administer antibiotics themselves. Keepers of livestock should at least comply with the following general conditions to be granted this permission:

- a centrally registered contract with one vet has to be present;
- herd health and herd treatment plans must be up-to-date and contain measures to reduce the need for antibiotics;
- evidence of a periodic herd inspection by the veterinarian has to be forwarded.

The legal establishment of these conditions are actually a reinforcement of the initial plans of the livestock industry.

Specific administration conditions are:

- antibiotics are only to be prescribed and delivered after clinical inspection of the animals and diagnosis by the vet and only for one course of treatment; the livestock keeper is allowed to finish a course of treatment initiated by the vet;
- for certain specific disorders as documented in the herd treatment plan a livestock keeper is allowed to start an antibiotic treatment of individual animals by himself; however, this is - with a few exceptions - only allowed when first choice antibiotics are indicated; only a limited number of doses, related to the number of animals in question, may be present on the farm for this purpose.

## Results so far

The results of the policy for a reduced and responsible use of antibiotics in livestock production until 2012 can be seen in figures 4 and 5.

Figure 4 shows that the sales of veterinary antimicrobials in the Netherlands dropped by 49% in 2012 compared to 2009, which means that the target set for 2013 was virtually achieved. Moreover, the sales of third and fourth generation cephalosporins dropped by more than 90%.

Figure 4. Sales of veterinary antimicrobials for therapeutic purposes in the Netherlands in tons of active substance (source: FIDIN).

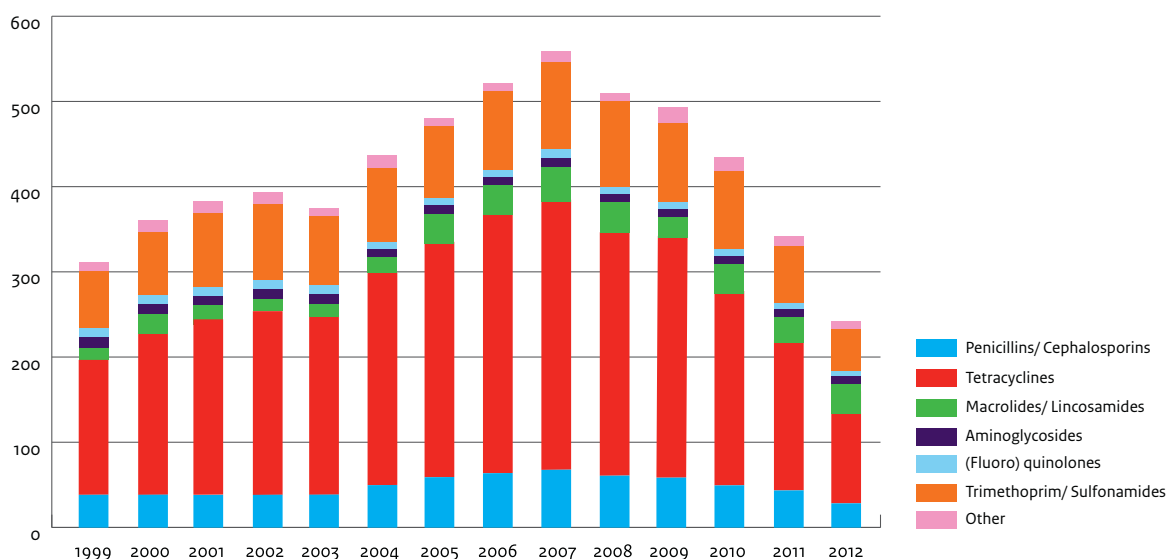
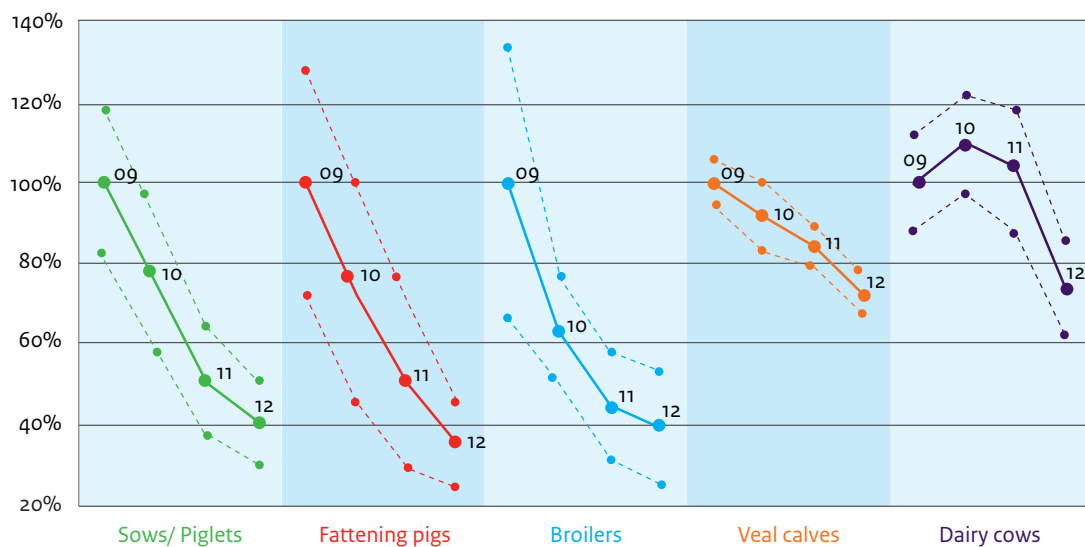


Figure 5 shows that all major production sectors contributed to the reduction in use, though the pig and broiler production sectors showed most progress. It should however be noted that in the Netherlands the pig and the veal sector each account for about 40% of total sales, and the broiler and dairy sector for about 10% each. So the pig industry accounted for the majority of the total sales reduction.

Figure 5. Development of antibiotic use per species in the period 2009-2012 in % of ADDD/Y in 2009 (LEI, 2012).



## International policy

Spearheads in the international policy of the Netherlands can be summarised as ‘a restrictive and responsible use of antibiotics in livestock industry in all EU Member States and beyond, primarily for the sake of preservation of antimicrobial treatment options in human health care’.

The aim of policy within Europe is:

- establish concrete plans for reduction and prudent use in all Member States
- minimise veterinary use of antibiotics which are of critical importance in human health care
- reserve of newly developed antibiotics for human health care
- increase emphasis on risk of resistance development in new market authorisations
- revise and limit off-label use regulation; exclude last-resort antibiotics from the off-label use;
- create international cooperation to combat illegal (internet) trade.

## Critical success factors and challenges

A critical factor for the success of Dutch policy on veterinary antimicrobial use was undoubtedly the rapid response of the livestock production industry and the veterinary association on the sense of urgency felt in human healthcare, research and subsequently at the political level. This enabled both a public-private approach with a broad based support and the use of the already operational production chain quality systems as the main vehicle.

Currently the major challenges are to reduce veterinary antimicrobial treatments to cases where it is absolutely necessary for cure or mitigation of the spread of the disease within herds. Sanitary and structural measures should also prevent future production systems being dependent on antimicrobial use. It will also be a challenge to preserve sufficient treatment options for both human and veterinary health care.

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