

Farm antibiotic use in the Netherlands

Levels of farm antibiotic use in the Netherlands

Over the past seven or eight years, the Netherlands has made very large cuts in its overall use of farm antibiotics. A decade ago, the Netherlands was a high user of farm antibiotics, and an exceptionally low user of antibiotics in human medicine. However, following the emergence of new types of resistant bacteria in farm animals (in particular, MRSA and a highly resistant type of *E. coli* called ESBL *E. coli*) which appeared to be transferring to humans and causing infections, various initiatives were introduced to cut farm antibiotic use. Table 1 shows the trend in veterinary antibiotic sales since 1999.

Table 1 Active ingredient of antibiotics sold for use in veterinary medicine in Netherlands (tonnes) 1999-2015 [5]

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
310	356	376	390	378	434	487	519	565	506	495	433	338	249	217	207	206

A major reason for the large reductions in overall use of antibiotics has been a decision to end routine preventative group treatments. Group treatments are now only used if a veterinarian has actually diagnosed a disease outbreak within the group. Routine preventative dry-cow therapy is also no longer permitted.

In addition to making large cuts in overall farm antibiotic use, the Netherlands has made even larger cuts in the use of the critically important antibiotics, the fluoroquinolones and the modern cephalosporins. The use of fluoroquinolones has been cut by over 80% between 2009 and 2015, and the use of modern cephalosporins has been cut by a remarkable 99% during this period.

The antibiotic colistin, now used as a last-resort antibiotic in human medicine for certain life-threatening infections, continues to be used in Dutch farming, although overall use has been cut by 68% since 2011.

Data from the European Medicines Agency shows that about 86% of Dutch farm antibiotic use is for mass medication, in animal feed or drinking water, with little over 10% being used for individual treatments [2].

Since 2009, the largest reductions in Dutch farm antibiotic use have been in broilers (60%) and pigs (56%), followed by dairy cows (47%), and the lowest reduction has been in veal calves (34%) [3].

Comparison with other EU countries

The most recent statistics for all EU countries are for 2014, and in 2014 farm antibiotic use in the Netherlands was well below the EU average. Sales are calculated in terms of weight of active ingredient per unit of livestock (the EU unit of livestock is called a "Population Correction Unit" or PCU), and use in the Netherlands was 68.4 mg/PCU, whereas the average for 29 European countries (EU/EEA) was 152 mg/PCU.

Nevertheless, use in the Netherlands remains significantly higher than in the Nordic countries (Norway 3.1 mg/PCU, Iceland 5.2 mg/PCU, Sweden 11.5 mg/PCU, Finland 22.3 mg/PCU, Denmark 44.2 mg/PCU). [2] With the exception of Denmark, in all of these Nordic countries most farm antibiotics are used for individual treatments.

Care must be taken when comparing internationally, as antibiotic use is different in different species. Usually, intensively farmed species like pigs, poultry and veal calves (when they are intensively farmed) have very high antibiotic use, whereas extensively farmed sheep and cattle raised on pasture tend to have much lower antibiotic use. So countries with different proportions of different species can be expected to have different use levels.

Ideally, international comparisons should therefore be by species, but most countries do not produce such data. Some countries, like the Netherlands, Denmark and France do produce species data, and compared with these countries French use is very high. See Table 2.

Table 2 Antibiotic use in different species in France, Denmark and the Netherlands (kg/PCU)[3][4][5]

	Netherlands (2015)	Denmark (2014)	France (2014)
Pigs	53	48	152
Poultry	45	13	151
Cattle	83	32	56

As can be seen in Table 2, antibiotic use in Dutch pigs is now nearly as low as in Denmark, but use in poultry remains significantly higher. Use in Dutch cattle is still very high, despite large reductions, because of the large number of intensively farmed veal calves.

National actions taken in the Netherlands

The Dutch Parliament set several targets for reducing farm antibiotic use. Using 2009 as a baseline, a 20% reduction was targeted for 2011, 50% for 2013 and 70% for 2015. The first two targets were met, but the overall reduction in 2015 was only 58% (it was 63% compared with the peak year of 2007).

A new body, the Netherlands Veterinary Medicines Authority (sDA), has been established, whose aim is to promote the responsible use of veterinary medicines, and in particular of antibiotics in Dutch farming. The sDA now collects antibiotic use data by species, and uses it to set benchmarks for each species and for veterinarians, so that reduction efforts can be targeted at those farms or veterinary practices where antibiotic use or prescribing is high.

Routine preventative use has ended which has largely contributed to reducing overall use, but mass medication remains nevertheless by far the most common form of treatment.

Since 2011, all antibiotics used in Dutch farming have been classified by the sDA as 1st, 2nd and 3rd choice. Only 1st choice antibiotics can be used “empirically”, ie. before it is known what the bacteria causing the infection are, and without carrying out sensitivity. Second-choice antibiotics can only be used if sensitivity testing (ie. testing to see whether the bacteria are resistant to particular antibiotics) shows that 1st choice antibiotics would be unlikely to work. The 3rd choice antibiotics can only be used if sensitivity testing shows that neither 1st or 2nd choice antibiotics would work. All critically important antibiotics are classified as 3rd choice, which has greatly helped in reducing their use since 2009.

What still needs to be done

The Netherlands needs to completely ban the use of the antibiotic colistin, which is now a last-resort antibiotic in human medicine for certain life-threatening infections, but is remains in use in Dutch, and European farming, for mass medication.

Although the Netherlands has made major improvements to its use of farm antibiotics, including the critically important antibiotics, use still remains much higher, per animal, than in some of the Nordic countries. The main reason for this is because of the highly intensive nature of Dutch farming.

As an article written by the former and current Chair of the expert panel of the sDA argued, substantial further reductions in farm antibiotic use may be warranted, and they suggested this might require changes in “animal production practices” [7].

While herd-health plans are now mandatory in the Netherlands [8], there have not been major changes to intensive practices which result in much higher need for antibiotics.

A recent Belgian study found that antibiotic use in intensively farmed veal calves was over 25 times higher than in more extensively raised beef cattle, and levels of antibiotic resistance in the veal calves was also much higher. The Netherlands has a large number (over 900,000) of intensively farmed veal calves, and antibiotic use and resistance is highest in “white veal” (raised on milk alone) and lower in “rosé veal” (also fed roughage and slaughtered at an older age) [1].

An example of how less intensive farming practices, focused on animal health, can reduce antibiotic use is provided by a recent study of the French, Belgian, German and Swedish pig industries [9][10]. It found that the median number of antibiotic treatments was nearly 7 times higher in France than in Sweden (and in Belgium and Germany the number of treatments was even higher than in France). A major reason for the lower use in Sweden appears to be later weaning of piglets, which is likely to lead to fewer problems with post-weaning diarrhoea. In Sweden, the median age of weaning was found to be 35 days, whereas in France, Belgium and Germany it was between 22 and 25 days. In France, Belgium and Germany, antibiotic use in weaners was extremely high and accounted for most use throughout the pigs’ lives. In contrast, median antibiotic use in Swedish weaners was over 100 times lower.

Pig farmers in most EU countries, can wean as early as 21 days. Council directive 2008/120/EC mentions an official weaning age of 28 days, but allows weaning at 21 days when certain minimal requirements are met. In contrast, in Sweden weaning is not legally permitted before 28 days. Dutch animal-health and welfare laws should be amended to ensure a later weaning age.

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