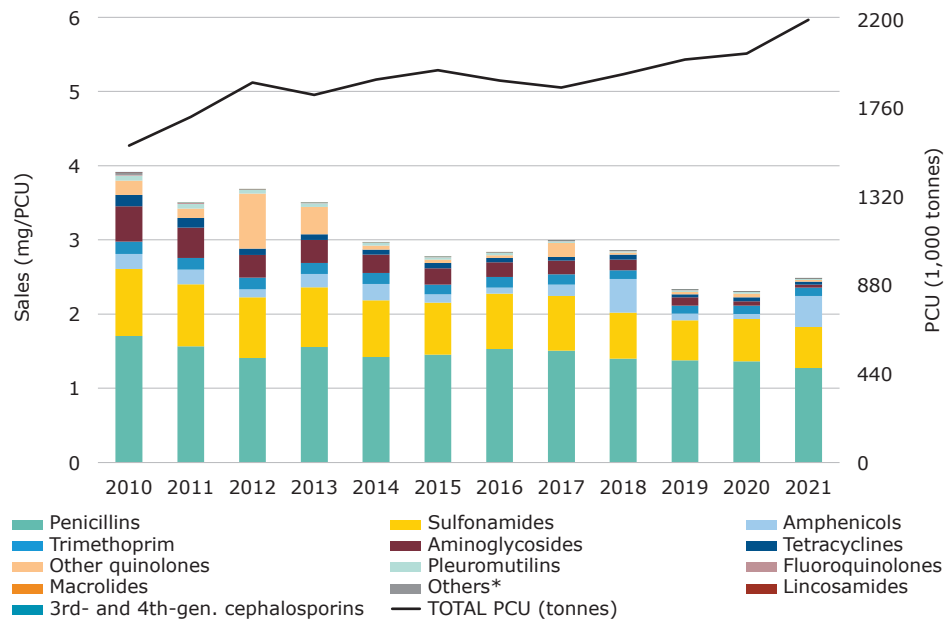


Sales trends (mg/PCU) of antibiotic VMPs for food-producing animals

Sales trends by antibiotic class (mg/PCU) from 2010 to 2021¹



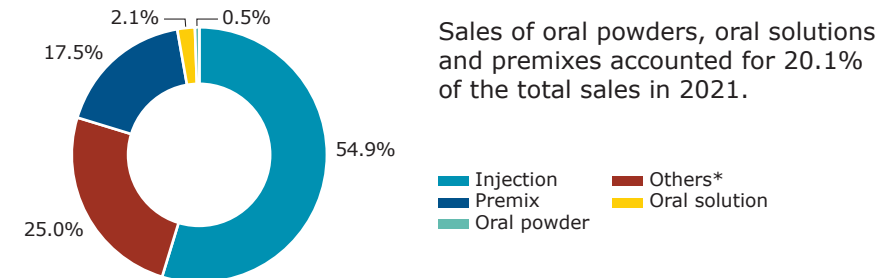
¹ Sales data sorted from highest to lowest in 2021.

*The class 'Others' includes sales of spectinomycin (classified as other antibacterials in the ATCvet system).

Since 2010:

- ↓ 36.6% overall annual sales (from 3.9 mg/PCU to 2.5 mg/PCU in 2021)
- ↓ 69.2% 3rd- and 4th-generation cephalosporin sales (<0.01 mg/PCU in all years)
- ↓ 70.6% fluoroquinolone sales (<0.01 mg/PCU in all years)
- ↓ 86.8% other quinolone sales (from 0.02 mg/PCU to 0.03 mg/PCU in 2021)
- No sales of polymyxins in any of the years
- ↑ The PCU increased by 39.7% between 2010 and 2021

Proportion of sales (mg/PCU) by product form in 2021^{1,2}



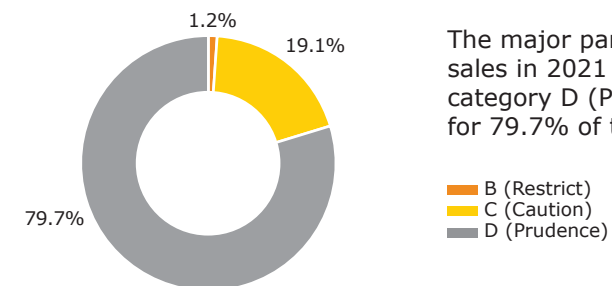
Sales of oral powders, oral solutions and premixes accounted for 20.1% of the total sales in 2021.

¹ No sales of bolus products in 2021.

² In Norway, premixes are only used in farmed fish.

* Other forms include intramammary, intrauterine and oral paste products.

Proportion of sales (mg/PCU) by AMEG categories in 2021



The major part of antibiotic VMP sales in 2021 belonged to the AMEG category D (Prudence), accounting for 79.7% of the total sales.

2021 sales data

In 2021, overall sales increased by 7.7% in comparison to 2020 (from 2.3 mg/PCU to 2.5 mg/PCU). The three highest selling antibiotic classes were penicillins, sulfonamides and amphenicols, which accounted for 51.3%, 22.3% and 16.8% of total sales, respectively.

Country information

The increase in overall sales in 2021 compared to 2020 was caused solely by increased sales of antibiotics for use in farmed fish.

From 2010 to 2021, a decrease was noted for most antimicrobial classes, including the highest selling classes, i.e. penicillins, sulfonamides, aminoglycosides and trimethoprim. Sulfonamides, the second highest selling antibiotic class in Norway in 2021, are almost solely sold in combination with trimethoprim as oral paste for horses. For amphenicols, which are used almost exclusively in farmed fish, sales have fluctuated but an overall decline was observed during the period 2010–2021. This is also the case for other quinolones that are only used in farmed fish. The overall reduction in sales from 2010 to 2021 is mainly accounted for by lower sales of VMPs containing penicillins, aminoglycosides and sulfonamides combined with trimethoprim, which are used for terrestrial food-producing animals. Of the AMEG Category B antimicrobials — i.e. 3rd- and 4th-generation cephalosporins, polymyxins and quinolones (fluroquinolones and other quinolones) — only quinolones are marketed in Norway for food-producing animals, including farmed fish.

Two 3rd-generation products have been approved via EU community procedures, but these are not marketed in Norway. Applications for special permits to use such VMPs marketed in other EEA countries for food-producing animals are not normally approved. An approval would only be given for specific animals if sensitivity testing precluded all other options. The same applies to polymyxins.

There were no sales of 1st- and 2nd-generation cephalosporins or polymyxins in any of the years. In the period 2010–2021, minor quantities of macrolides (<0.003 mg/PCU) and of 3rd- and 4th-generation cephalosporins (<0.0007 mg/PCU) were sold annually; for the years 2010 and 2017–2021, minor quantities of lincosamides (<0.015 mg/PCU) were sold annually; and for the years 2010 and 2017–2021 minor quantities of other antibacterials (<0.025 mg/PCU) were sold annually.

Of note is that the observed increase in the PCU value from 2010 to 2021 is merely due to the increased production of farmed fish. In 1996, the Norwegian husbandry organisations (NHO) agreed on a target of a 25% reduction in the consumption of antimicrobial VMPs by terrestrial food-producing animals over five years, with 1995 as the reference year. In parallel, NHO initiated a responsible-use campaign, among other initiatives, by implementing the therapeutic guidelines it had published in connection with the campaign. More comprehensive therapeutic guidelines were published by the Norwegian Medicines Authority in the late 1990s and these guidelines have been revised regularly. From 1995 to 1999, a reduction of approximately 40% in the sale of antimicrobials for terrestrial food-producing animals was achieved. Since then, sales of antimicrobial agents for use in terrestrial food-producing animals have been relatively stable, showing only minor fluctuations (see NORM/NORM-VET reports). It should be noted that since 1981, sales of antimicrobials for use in farmed fish measured in quantity of active substance have declined by 99%, while during the same period the production of farmed fish has increased more than a hundredfold.

In the National Strategy against Antibiotic Resistance (2015–2020) a target was set to reduce the usage of antimicrobials in terrestrial food-producing animals by 10% by 2020, with 2013 as the reference year. This strategy has been extended to also cover 2021 and 2022. From 2013 to 2021, estimated sales of antibiotic VMPs for cattle, pigs, poultry, sheep and goat declined by 25% when measured in kg and 21% when measured in mg/PCU (NORM/NORM-VET)¹.

The annual reports (NORM/NORM-VET) on antimicrobial consumption and antimicrobial resistance in the animal and human sectors in Norway are available in English on the Norwegian Veterinary Institute website¹.

¹ <https://www.vetinst.no/overvaking/antibiotikaresistens-norm-vet>