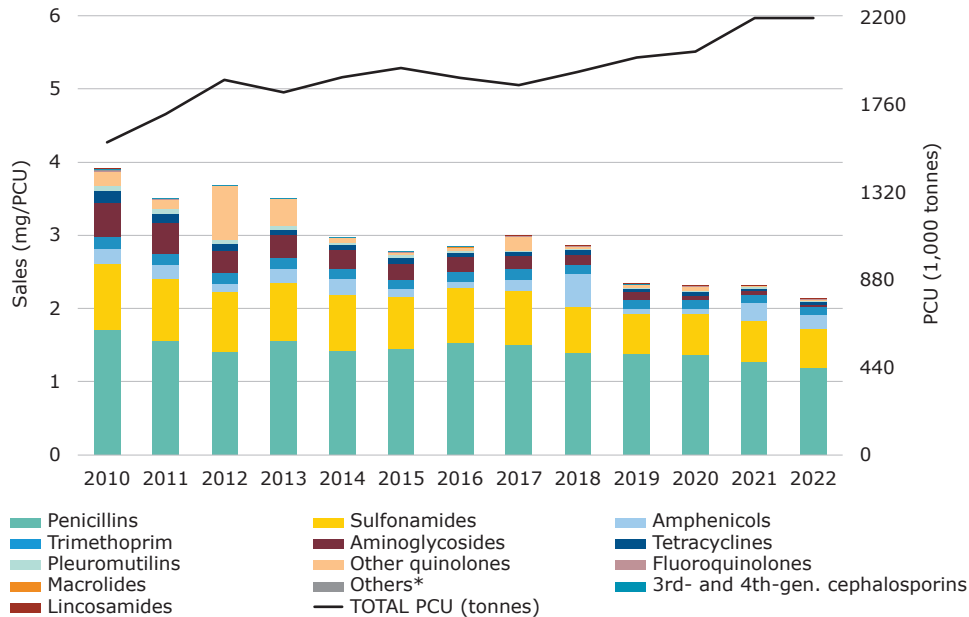


Sales trends (mg/PCU) of antibiotic VMPs for food-producing animals

Sales trends by antibiotic class (mg/PCU) from 2010 to 2022^{1,2}



¹ Sales data sorted from highest to lowest in 2022.

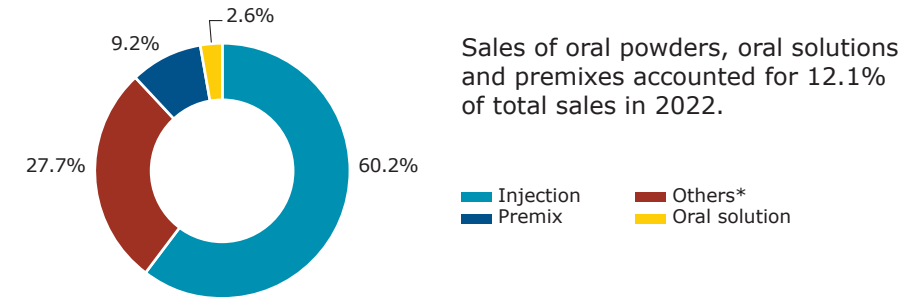
² No sales of 1st- and 2nd-generation cephalosporins or polymyxins in any of the years. No sales of lincosamides and 'Others' in 2011-2016.

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

Since 2010:

- ⬇️ 45.7% overall annual sales (from 3.9 mg/PCU to 2.1 mg/PCU in 2022)
- ⬇️ 73.8% 3rd- and 4th-generation cephalosporin sales (<0.01 mg/PCU in all years)
- ⬇️ 72.4% fluoroquinolone sales (≤0.01 mg/PCU in all years)
- ⬇️ 93.5% other quinolone sales (from 0.20 mg/PCU to 0.01 mg/PCU in 2022)
- No sales of polymyxins in any of the years.
- ⬆️ PCU increased by 39.8% between 2010 and 2022

Proportion of sales (mg/PCU) by product form in 2022^{1,2,3}



Sales of oral powders, oral solutions and premixes accounted for 12.1% of total sales in 2022.

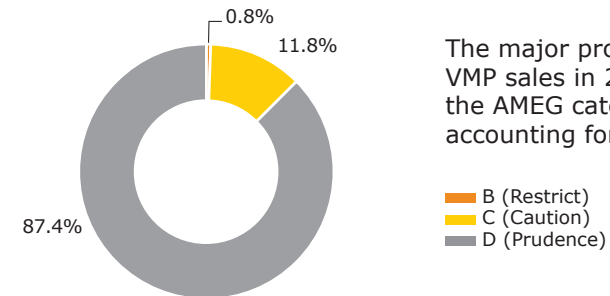
¹ No sales of bolus products in 2022.

² Premixes are only used in farmed fish.

³ Sales of oral powders are not represented in this figure and accounted for 0.3% of total sales in 2022.

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

Proportion of sales (mg/PCU) by AMEG categories in 2022



The major proportion of antibiotic VMP sales in 2022 belonged to the AMEG category D (Prudence), accounting for 87.4% of total sales.

2022 sales data

In 2022, overall sales decreased by 8.4% in comparison to 2021 (from 2.3 mg/PCU to 2.1 mg/PCU). The three highest selling antibiotic classes were penicillins, sulfonamides and amphenicols, which accounted for 56.2%, 24.8% and 9.0% of total sales, respectively.

Country information

From 2010 to 2022, 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 2022, are almost solely sold in combination with trimethoprim as oral paste for horses. Sales of amphenicols, which are used almost exclusively in farmed fish, have fluctuated over the years. This is also the case for other quinolones that are only used in farmed fish. The overall reduction in sales from 2010 to 2022 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 cephalosporins 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 2010–2022, 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 2017–2022, minor quantities of lincosamides (<0.012 mg/PCU) were sold annually; and for the years 2010 and 2017–2022 minor quantities of other antibacterials (<0.024 mg/PCU) were sold annually.

Of note is that the observed increase in the PCU value from 2010 to 2022 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 5 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 this campaign. The Norwegian Medicines Authority published more comprehensive therapeutic guidelines in the late 1990s and these 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 1999 and until 2013, sales (in kg) of antimicrobial agents for use in terrestrial food-producing animals were relatively stable, while for the period 2013-2022 a substantial reduction in the sales (in kg) is observed (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, published in 2015, 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 2022, estimated sales of antibiotic VMPs for cattle, pigs, poultry, sheep and goats declined by 30% when measured in kilograms and 26% 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>