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Antimicrobial consumption in animals

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Highlights

In 2025, total antimicrobial consumption in animals amounted to 88.44 tonnes of active compounds, representing a 1.14% increase compared with 2024. Pigs accounted for 84.68% of total consumption, followed by cattle (9.27%) and poultry (1.52%). Pig production remained the principal driver of antimicrobial consumption in Danish livestock production, despite cattle representing the largest share of estimated live biomass.

Antimicrobial consumption in **pig** production totaled 74.88 tonnes, corresponding to an increase of 2.03% from 2024. During the same period, the estimated live biomass increased by 0.38%, primarily due to increased production of 30 kg pigs intended for export. Taken together, these changes resulted in a 2.41% increase in the treatment proportion (DAPD). On any given day, an estimated 1.80% of sows and piglets, 11.57% of weaners, and 1.89% of finishers received antimicrobial treatment. Among sows and piglets, DAPD increased only for lincosamides (165.47%), while amphenicols (17.65%), pleuromutilins (17.32%), other penicillins (10.96%) and macrolides (5.55%) decreased. In weaners, amphenicols (19.02%), lincosamides (11.37%), and macrolides (9.88%) increased, while pleuromutilins (7.89%), aminoglycosides (4.48%), and beta-lactamase-sensitive penicillins (4.84%) decreased. In finishers, lincosamides (537.49%), macrolides (14.90%), and pleuromutilins (8.61%) increased, while amphenicols (58.66%), sulfonamides and trimethoprim (36.71%), and aminoglycosides (11.54%) decreased.

In **cattle**, antimicrobial consumption decreased to 8.20 tonnes, corresponding to a reduction of 0.72% compared with 2024, while the estimated live biomass declined by 1.05%. On any given day, an estimated 0.26% of adult cattle and 0.85% of young cattle received antimicrobial treatment. Among adult cattle, DAPD of lincosamides, aminoglycosides, macrolides and other penicillins increased by 56.77%, 8.08%, 3.74% and 4.35%, respectively, whereas amphenicols, beta-lactamase-sensitive penicillins, and tetracyklines decreased by 18.45%, 5.06% and 2.44%, respectively. The use of cephalosporins for systemic administration increased by 19.12 kg of active compound, corresponding to a 334.18% increase compared with 2024. Among young cattle, DAPD of macrolides, other penicillins and amphenicols increased by 21.29%, 7.60% and 4.73%, respectively, while lincosamides, tetracyclines, beta-lactamase-sensitive penicillins and aminoglycosides decreased by 28.48%, 22.94%, 5.44% and 3.95%, respectively. Beta-lactamase-sensitive penicillins continued to dominate intramammary treatments.

Antimicrobial consumption in **poultry** increased by 17.95% compared with 2024. Despite this increase, overall use remained very low and continued to be strongly influenced by disease outbreaks affecting a limited number of flocks.

In **horses** and **pets**, fluoroquinolone consumption was 12.75 kg in 2025 and was prescribed almost exclusively for these species. Cephalosporin consumption remained low at 42.03 kg, with pets accounting for 42.04% of total cephalosporin use.

4.1 Introduction

The DANMAP programme has monitored national antimicrobial consumption in both humans and animals since 1995. From the early 1990s, growing political and public concern over antimicrobial use in Danish animal production led to significant changes, including the discontinuation of antimicrobials for growth promotion and the implementation of several initiatives, such as voluntary bans on the use of 3rd and 4th generation cephalosporins in pig and cattle production. These initiatives were complemented by regulatory measures governing the therapeutic use of these antimicrobials.

Figure 4.1 presents the total antimicrobial consumption in animals and humans since 1990 and 1997, respectively. The expansion and intensification of Danish pig production during this period contributed to the overall trends in antimicrobial consumption.

The observed decline in antimicrobial consumption after 1994 was primarily attributed to the discontinuation of antimicrobials for growth promotion. Additional contributing factors likely included: 1) restrictions on veterinary practitioners' profits from the sales of medicines, 2) the implementation of Veterinary Advisory Service Contracts (VASCs), which introduced regular veterinary visits aimed at promoting preventive strategies and optimizing antimicrobial use, and 3) the enforcement of the "cascade rule" [Order (DK) 142/1993], which limited the prescription of less expensive extemporaneously produced medicines.

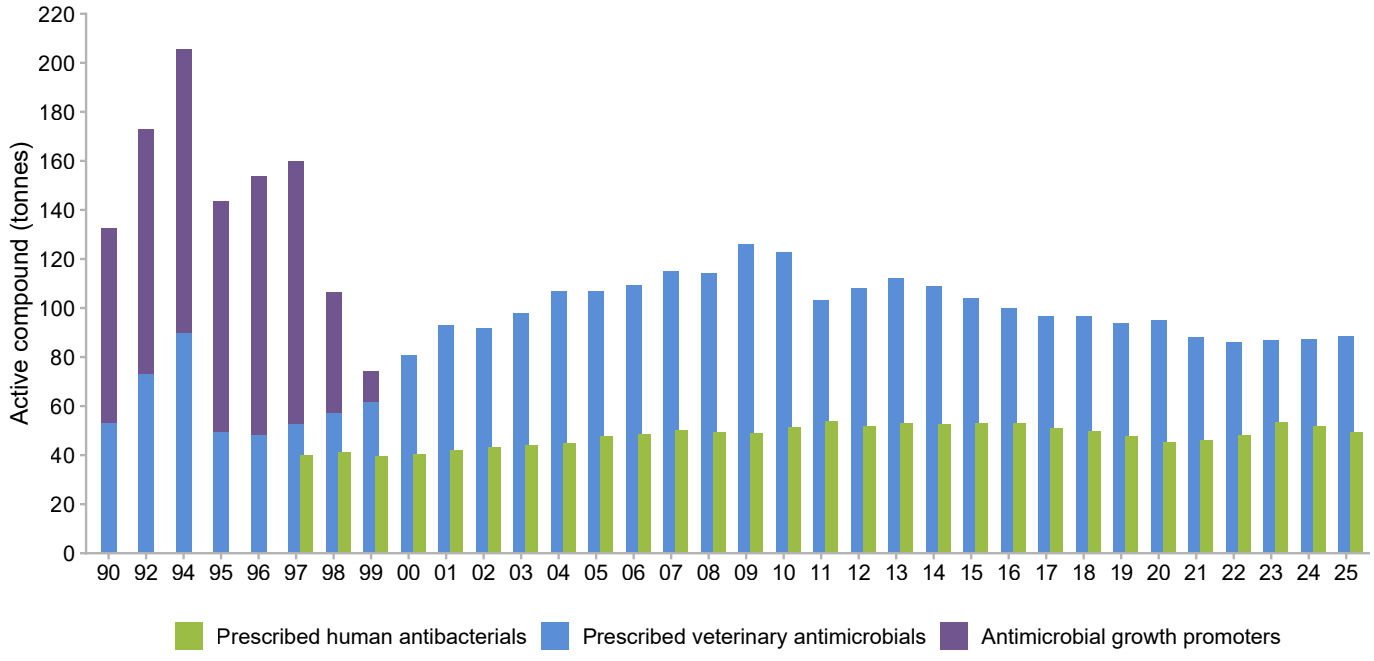
Other important interventions included legislative restrictions on the use of fluoroquinolones in production animals, introduced in 2002–2003, followed by a voluntary ban on the use of cephalosporins in pig production in 2010, which was extended to dairy cattle production in 2014.

The national action plan against antimicrobial resistance has evolved over time, setting progressively more targeted goals to curb antimicrobial use. Initially, the plan aimed for a 10% reduction in antimicrobial consumption in production animals by 2014, using 2009 levels as the baseline. In 2015, a new objective was introduced under the national strategy to combat livestock-associated MRSA, targeting a 15% reduction in antimicrobial use in pig production between 2015 and 2018.

To support the goals outlined in the national action plan, the Yellow Card initiative was introduced in 2010, establishing herd-level surveillance of antimicrobial consumption in pig production. Under this system, antimicrobial use is monitored at the herd level against legally defined thresholds, enabling authorities to take action against farmers with excessive use per pig [DANMAP 2010].

Figure 4.1 Antimicrobial consumption for humans and all animal species, tonnes of active compound, Denmark, 1990-2025

DANMAP 2025



Sources: Human therapeutics: The Danish Health Data Authority. Antimicrobials for animals: Data are based on reports from the pharmaceutical industry of total annual sales (until 2001), from the Federation of Danish pig producers and slaughterhouses (1994-1995), from the Danish Medicines Agency and Danish Plant Directorate (1996-2000), and since 2001 from VetStat.
Data for 2025 were extracted from VetStat on 31 July 2026.

The implementation of the Yellow Card system led to a noticeable reduction in antimicrobial consumption at the national level, particularly during its initial rollout from 2010 to 2011 and again following its revisions between 2016 and 2018. In 2016, the initiative was updated to include multiplication factors that adjusted the weighting of specific antimicrobials within the monitoring system. Tetracyclines were initially assigned a factor of 1.2, which was increased to 1.5 in 2017. Fluoroquinolones, cephalosporins, and colistin were assigned the highest multiplication factor of 10 [DANMAP 2017], reflecting their critical importance and the need to discourage their use.

Other legislative measures have also likely influenced antimicrobial prescribing practices. For instance, in 2014, regulations governing group medication in pig herds were tightened [Order (DK) 534 of 27/05/2014]. These changes required more rigorous diagnostic procedures, including thorough laboratory testing, as well as more frequent veterinary visits. The aim was to ensure that antimicrobials administered orally to groups of pigs via water or feed were prescribed only when clearly justified, thereby encouraging more targeted treatments such as individual injectable administration.

In 2017, the Ministry of Environment and Food and the Ministry of Health presented a new One Health strategy to combat antimicrobial resistance. This strategy established a comprehensive framework aimed at reducing the development and spread of AMR across both human and animal populations. In the same year, Denmark launched its first national action plan targeting antimicrobial resistance in animals, setting specific goals to further reduce antimicrobial use in animal production over the following years. This was followed by a second action plan in 2021. Most recently, in June 2024, a new national action plan against AMR in animals and food was adopted.

To help reduce the need to dispose of excess antimicrobials, a regulation introduced in 2019 [Order (DK) 1655/2018] permitted veterinarians and pharmacies to dispense individual immediate packages from a veterinary medical product package when necessary to avoid the disposal of surplus medicine. This initiative not only minimizes waste but may also improve surveillance by narrowing the gap between the quantities of antimicrobials prescribed and those actually consumed.

Official treatment guidelines for pigs and cattle have been available since 1996. Over time, the Danish Veterinary and Food Agency (DVFA) has continuously updated these guidelines in collaboration with stakeholders and academic experts [DANMAP 2010, www.foedevarestyrelsen.dk].

In 2012, the Danish Veterinary Association (DVA) published treatment guidelines to promote the prudent use of antimicrobials in dogs and cats. These guidelines were developed by clinical specialists and experts from the Faculty of Health and Medical Sciences at the University of Copenhagen and the National Food Institute at the Technical University of Denmark. A revised edition of the guidelines for dogs and cats was published in 2018. Similarly, in 2017, the DVA released treatment guidelines for the responsible use of antimicrobials in horses.

Alongside these sector-specific targets, guidelines issued by the DVFA emphasize disease prevention, improved udder health and the use of narrow-spectrum antimicrobials when treatment is required.

By 2020, the Danish dairy and beef producers' board had set a strategic goal to reduce antimicrobial use for mastitis and other cattle diseases by 20% compared to 2012 levels. Another objective was to lower the geometric mean bulk tank somatic cell count to 150,000 cells/ml. The strategy also promotes the use of simple penicillins (beta-lactamase-sensitive) for dry-cow therapy and mastitis treatment.

For the period 2021–2023, the board renewed its strategy for disease prevention in calves and cows, including updated udder health targets. The goals included a 10% annual reduction in antimicrobial use for cattle under 1 year of age and a 3% annual reduction for cattle over 1 year of age. Additionally, the strategy aimed to reduce the proportion of milk producers with somatic cell counts >200,000 cells/mL from 60% to 30%.

Since 28 January 2022, Regulation (EU) 2019/6 on veterinary medicinal products has been in force in Denmark. This regulation places particular emphasis on reducing the risk of antimicrobial resistance. It includes several key provisions regarding the prescription and use of veterinary medical products. These include limiting prescriptions to the exact quantity required for treatment, restricting the use of antimicrobials for metaphylactic or prophylactic purposes, and ensuring that all VMPs are used in accordance with their marketing authorizations (SPC). Furthermore, the regulation prohibits the routine use of antimicrobials to compensate for poor hygiene or management practices and designates certain critically important antimicrobials, listed in Regulation (EU) 2022/1255, as being reserved exclusively for the treatment of specific infections in humans [DANMAP 2022, Textbox 4.1].

In line with recommendations from the European Medicines Agency (EMA) and a subsequent decision by the European Commission in 2017, Denmark along with all EU Member States was required to phase out the use of veterinary medicinal products (VMPs) containing zinc oxide in food-producing animals by June 2022. As a result, the use of prescribed zinc oxide in pig production has been prohibited in Denmark since that date [DANMAP 2022, Textbox 4.2].

In September 2024, DVFA launched its third National Action Plan Against Antimicrobial Resistance in Animals and Food (2024–2027), continuing Denmark's One Health approach to combating antimicrobial resistance. The action plan focuses on four priority areas: strengthened surveillance, healthy livestock with prudent and low antimicrobial use, targeted

communication, and national and international collaboration. In accordance with the Food and Veterinary Agreement 2024–2027, the plan includes a national target of reducing antimicrobial consumption in pigs by 8% by 2027 compared with the 2018 baseline, while maintaining a high level of animal health through improved biosecurity, disease prevention, and prudent antimicrobial use.

To support this objective, the DVFA revised the Yellow Card scheme by lowering the antimicrobial consumption threshold values for weaners and finishers by 20%, effective from 31 December 2025. The revised thresholds are intended to encourage a further reduction in antimicrobial use in pig production, whereas the threshold values for sows, gilts, boars, and piglets remain unchanged.

Data sources

In Denmark, antimicrobials are available only by prescription, and data on antimicrobial consumption have been systematically collected since 1990.

Since 2001, data on all medicines prescribed for animal use have been systematically recorded in the national database VetStat. Since 2010, VetStat has been hosted and maintained by the DVFA. In June 2021, DVFA launched an updated version of the VetStat platform.

The 2025 data presented in this report were extracted from VetStat on 31 July 2026. Data extraction, analysis, and interpretation were carried out by the National Food Institute at the Technical University of Denmark on behalf of DANMAP.

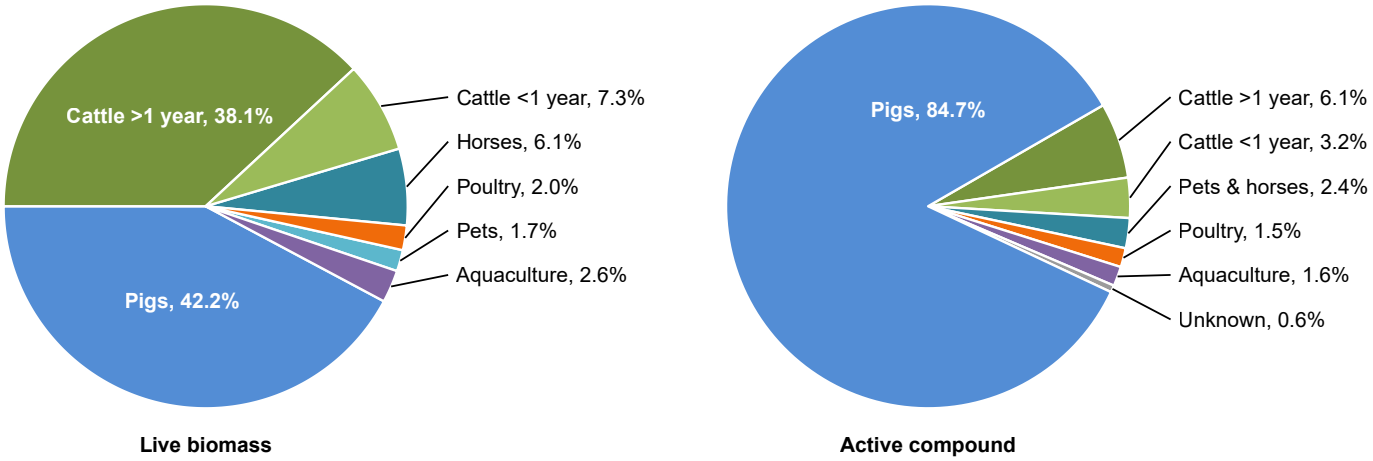
4.2 Total antimicrobial consumption in animals

In 2025, the total consumption of antimicrobials in animals amounted to 88.44 tonnes of active compound, representing a 1.14% (995.30 kg) increase compared to 2024 (Figure 4.1). Of this total, antimicrobial consumption in pigs accounted for 84.68%, followed by cattle at 9.27%, and poultry at 1.52% (Figure 4.2, Table 4.1).

Pig production is the primary driver of antimicrobial consumption in animals in Denmark. While cattle account for the largest share of live biomass, a substantial proportion of this biomass consists of dairy cows, which have significantly lower antimicrobial usage compared to growing animals such as those in slaughter pig production.

Between 2000 (the introduction of VetStat) and 2009, the total amount of antimicrobial active compounds used in animals increased by 61.7% (Figure 4.1). During this period, both the number of finishers produced and the proportion of live pigs exported at approximately 30 kg increased. From 2009 to 2021, antimicrobial consumption declined, while the proportion of exported pigs increased. Between 2022 and 2025, overall antimicrobial use increased modestly by 2.47%. Over the same period, the number of finishers produced fell by 14.02% compared to 2022, while the number of live pigs exported increased by 16.43%.

Figure 4.2 Distribution of live biomass and antimicrobial consumption in main animal species, tonnes, Denmark, 2025 DANMAP 2025



The live biomass is estimated from census data (pigs, cattle, and companion animals) and production data (poultry and aquaculture).
The estimation procedures are described in Chapter 10, Section 10.2.
Data for 2025 were extracted from VetStat on 31 July 2026.

Table 4.1 Antimicrobial consumption by animal species and age group, kg active compound, Denmark, 2024-2025 DANMAP 2025

	Aminoglycosides	Amphenicols	Cephalosporins [a]	Fluoroquinolones	Lincosamides	Macrolides	Other antimicrobials [b]	Other quinolones	Penicillins, beta-lactamase-sensitive	Penicillins, others	Pleuromutilins	Sulfonamides and trimethoprim	Tetracyclines	2024	2025
Pigs	18541.0	466.0	-	-	1761.1	12214.4	-	-	11663.2	8336.9	6147.1	5296.8	10456.6	73396.2	74883.1
Sows, piglets, gilts and boars	2151.5	208.1	-	-	257.6	305.9	-	-	6166.2	1913.0	582.9	3819.2	982.3	16664.2	16386.7
Weaners, =<30 kg	16280.1	249.2	-	-	1159.9	8262.1	-	-	1656.8	5714.5	2087.5	1449.7	6886.8	42997.4	43746.6
Finishers and polts	109.4	8.7	-	-	343.6	3646.4	-	-	3840.2	709.4	3476.7	27.9	2587.4	13734.6	14749.8
Cattle	766.6	1107.0	58.0	-	5.7	440.5	-	-	4079.4	682.0	-	386.3	670.7	8255.6	8196.1
Cows, bulls, heifers and steers >24 months	202.3	10.2	24.0	-	0.8	86.0	-	-	3330.8	362.4	-	284.5	456.0	4933.6	4757.0
Intramammaries	23.8	-	33.8	-	4.8	-	-	-	221.5	177.0	-	0.0	-	469.1	460.9
Calves <12 months	524.0	1090.7	0.0	-	0.1	350.6	-	-	440.7	132.6	-	100.3	198.1	2707.0	2837.1
Young cattle btw 12 and 24 months	16.5	6.1	0.1	-	0.0	3.9	-	-	86.3	9.9	-	1.5	16.7	145.9	141.1
Poultry	84.2	-	-	-	21.2	180.5	-	-	259.0	341.0	0.1	100.8	358.8	1140.9	1345.7
Broilers	39.5	-	-	-	16.9	66.0	-	-	40.0	201.2	-	96.6	119.6	552.7	579.8
Layer hens	31.5	-	-	-	-	103.4	-	-	82.9	13.6	-	-	34.1	247.2	265.5
Turkeys	8.6	-	-	-	4.3	-	-	-	135.9	104.8	-	-	161.0	285.8	414.5
Other poultry	4.7	-	-	-	-	11.1	-	-	0.3	21.4	0.1	4.2	44.1	55.2	85.9
Other production animals	2.2	123.2	-	-	0.0	0.1	-	277.0	0.6	6.2	-	981.7	2.7	1832.0	1393.6
Aquaculture	1.4	123.1	-	-	-	-	-	277.0	-	-	-	979.8	2.0	1812.1	1383.3
Fur animals	0.0	-	-	-	-	-	-	-	0.1	5.6	-	1.8	0.6	17.7	8.1
Other	0.7	0.1	-	-	0.0	0.1	-	-	0.5	0.7	-	0.0	0.1	2.2	2.2
Companion animals	6.4	0.6	42.0	12.7	72.6	0.4	29.0	-	14.9	453.0	0.4	1446.3	49.5	2268.6	2127.7
Horses	4.0	0.0	0.0	0.0	0.0	-	0.2	-	7.0	0.2	-	174.2	14.2	181.4	200.0
Pets	1.7	0.2	17.2	4.1	16.4	0.4	10.3	-	7.8	80.3	0.4	158.0	22.7	372.6	319.5
Unspecified	0.7	0.4	24.8	8.6	56.2	-	18.5	-	-	372.5	-	1114.1	12.6	1714.6	1608.2
Unknown [c]	56.1	4.8	0.8	0.0	1.9	11.8	0.0	1.0	277.3	48.8	11.3	12.2	67.4	551.0	493.4
Total	19456.4	1701.7	100.8	12.7	1862.6	12847.7	29.0	278.0	16294.3	9867.9	6158.9	8224.0	11605.6	87444.3	88439.6

Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
a) In 2025, 3rd generation cephalosporins were used in companion animals (0.75 kg) and cattle (0.03 kg).
b) Including other antiinfectives, dermatologicals, otological, ophthalmologicals, polymyxin, quinolones, and sulfonamides (plain).
c) Including data with no information on animal species/age group or mismatch between animal species and age group.
A dash (-) indicates no antimicrobial usage, and 0.0 indicates a consumption less than 0.05.

4.3 Antimicrobial consumption by animal species

4.3.1 Antimicrobial consumption in pigs

In 2025, a total of 74.88 tonnes of antimicrobials were used in pig production, representing an increase of 2.03% (1,486.9 kg) compared to 2024 (Table 4.1). During the same period, the estimated live biomass of pigs increased by 0.38%, primarily due to an increase in the number of exported pigs.

The total antimicrobial use was distributed across production stages, with approximately 16.39 tonnes used for sows and piglets, 43.75 tonnes for weaners, and 14.75 tonnes for finishers (Table 4.1).

The treatment proportion (DAPD) of the total population serves as an indicator of antimicrobial selection pressure within the population. DAPD is calculated as the number of standard doses per kg of animal divided by the estimated live biomass in the age group or the total population (in tonnes) (Chapter 10, Section 10.2). Figures 4.3, 4.4, and 4.5 illustrate DAPD values for the overall population of pigs, as well as for specific age groups of pigs and cattle.

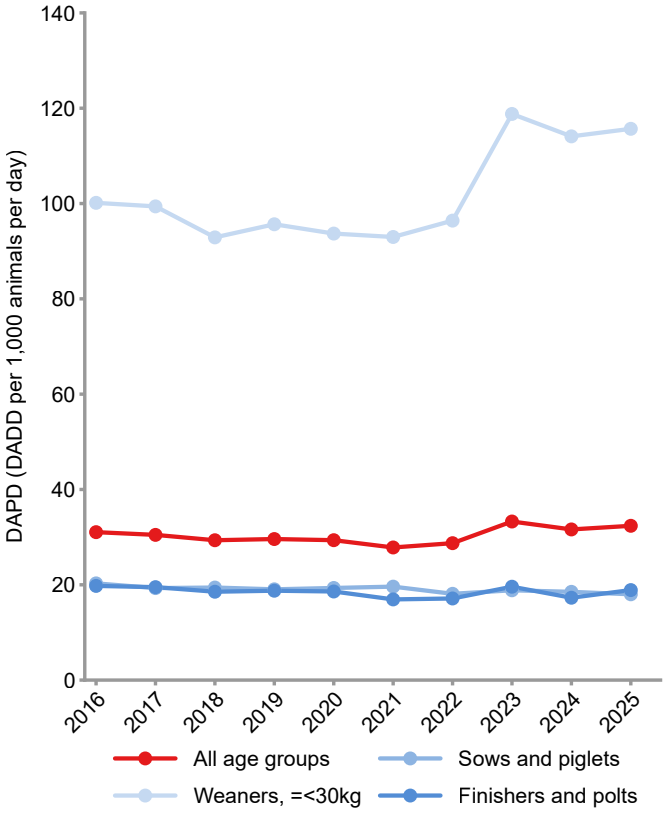
From 2004 to 2009, the DAPD showed a steady increase across all age groups. This was followed by a marked decline in 2010 and 2011, coinciding with the introduction of the Yellow Card initiative. Between 2013 and 2016, a slight but consistent downward trend in treatment proportion was observed (data not shown). This downward trend continued from 2016 to 2021 (Figure 4.3).

This trend reversed between 2021 and 2023, when DAPD increased by approximately 19.57%, primarily driven by increased antimicrobial use in weaners.

In 2025, the overall DAPD increased by 2.41% compared to 2024. However, trends varied across age groups. DAPD decreased by 2.80% in sows and piglets. In contrast, DAPD increased by 1.39% in weaners and by 9.32% in finishers (Figure 4.3).

In 2025, it is estimated that on any given day, approximately 1.80% of sows and piglets, 11.57% of weaners and 1.89% of finishers were treated with antimicrobials.

Figure 4.3 Total antimicrobial consumption in the pig production, Denmark, 2011-2025 DANMAP 2025



The age group "Sows and piglets" includes treatment of boars, where boars constitute approximately 0.86% of the estimated live biomass for the age group.
DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Data for 2025 were extracted from VetStat on 31 July 2026.

For 2025 compared to 2024, antimicrobial consumption in the overall population increased for lincosamides (46.73%), macrolides (8.62%) and sulfonamides and trimethoprim (1.63%). In contrast, usage declined for amphenicols (3.96%) and aminoglycosides (3.95%). From 2024 to 2025, changes in the use of pleuromutilins, other penicillins, beta-lactamase-sensitive penicillins, and tetracyclines were all below 1% (Figure 4.4).

Among sows and piglets, the change from 2024 to 2025 in DAPD values showed an increase only in lincosamides, from 0.09 DAPD to 0.24 DAPD (165.47%). The use of beta-lactamase-sensitive penicillins remained at 6.86 DAPD. In contrast, usage declined for amphenicols (17.65%), pleuromutilins (17.32%), other penicillins (10.96%), macrolides (5.55%), tetracyclines (2.84%), and aminoglycosides (2.49%) (Figure 4.4).

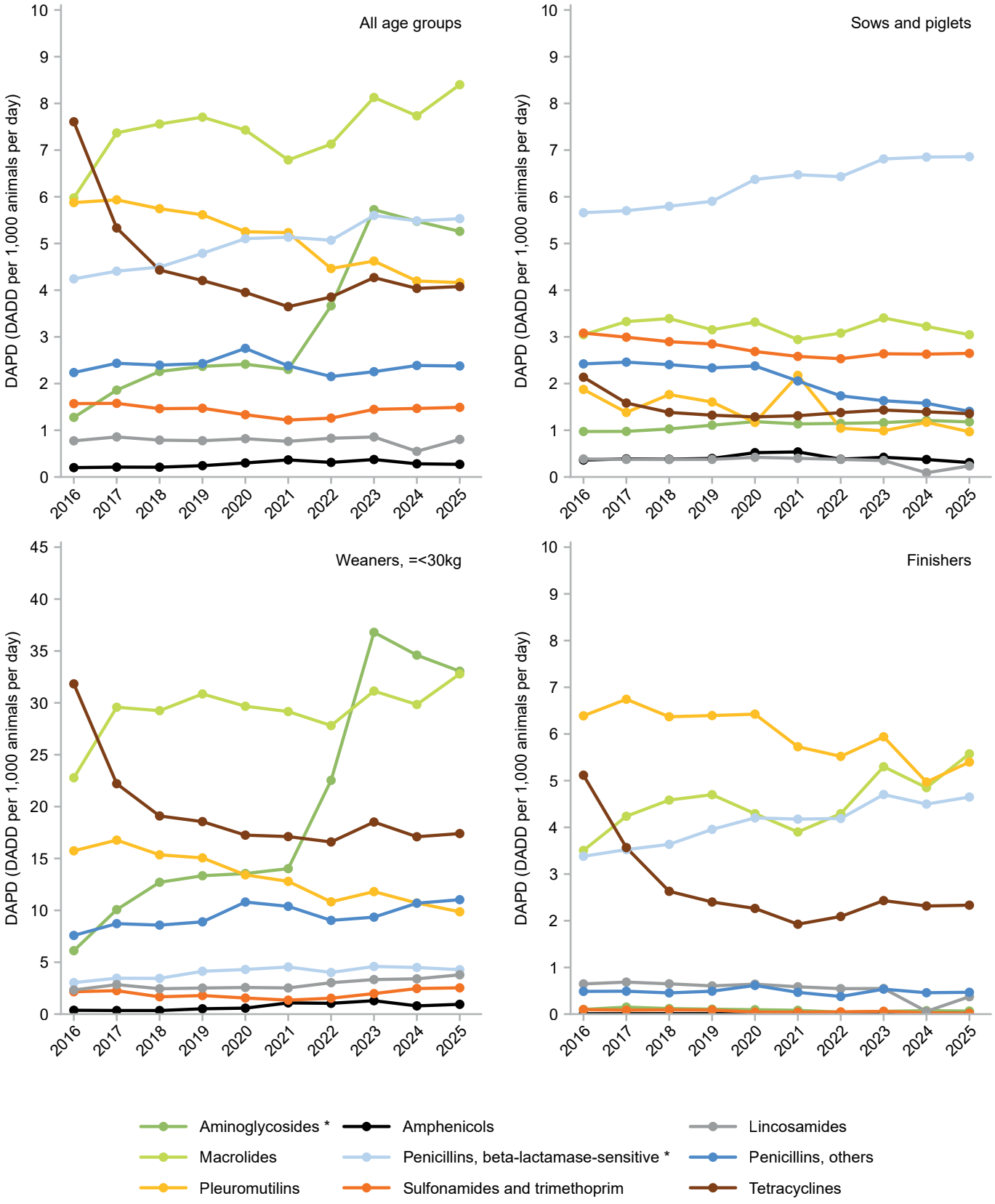
Following the ban on prescribed zinc oxide in pig production (effective June 2022), and the discontinuation of colistin, the use of aminoglycosides, neomycin and apramycin, in weaners increased significantly (Table 4.2). The DAPD values of aminoglycosides rose from 14.02 in 2021 to 34.60 in 2024. In 2025, usage declined to 33.05 DAPD, representing a 4.48% decrease compared to the previous year (Figure 4.4). Regarding additional changes in weaners from 2024 to 2025, the DAPD of amphenicols, lincosamides, macrolides, other penicillins, sulfonamides and trimethoprim, and tetracyclines increased by 19.02%, 11.37%, 9.88%, 3.15%, 2.73%, and 1.79%, respectively. There were reductions in DAPD of pleuromutilins (7.89%) and beta-lactamase-sensitive penicillins (4.84%) (Figure 4.4).

In finishers, the change from 2024 to 2025 showed that the DAPD increased from 0.06 DAPD to 0.37 DAPD (537.49%) for lincosamides. Moreover, the use of macrolides, pleuromutilins, beta-lactamase-sensitive penicillins and other penicillins increased by 14.90%, 8.61%, 3.37% and 2.02%, respectively. Meanwhile, amphenicols, sulfonamides and trimethoprim and aminoglycosides declined by 58.66%, 36.71%, and 11.54% (Figure 4.4).

In 2025, the three most commonly used active compounds in sows and piglets were procaine benzylpenicillin, tulathromycin, and sulfadiazin with trimethoprim. Among weaners, the most frequently used compounds were tylosin, doxycycline, and neomycin. For finishers, tiamulin, procaine benzylpenicillin, and tylosin were the predominant choices (Table 4.2).

Figure 4.4 Antimicrobial consumption in the total pig production and in each age group at antimicrobial class level, Denmark, 2016-2025

DANMAP 2025



* Please note that the reported level differs noticeably from DANMAP reports before 2024 due to DADD revisions.
The age group "Sows and piglets" includes treatment of boars, where boars constitute 0.86% of the estimated live biomass for the age group.
DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.

Table 4.2 Antimicrobial consumption in each age group of pig production at antimicrobial class and active compound level, DAPD, Denmark, 2016-2025 **DANMAP 2025**

Antimicrobial class	Active compound	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sows, piglets, gilts and boars											
Aminoglycosides	Apramycin	0.13	0.08	0.08	0.15	0.15	0.16	0.14	0.15	0.14	0.17
	Dihydrostreptomycin	0.60	0.51	0.51	0.53	0.59	0.59	0.64	0.67	0.67	0.69
	Gentamicin	0.02	0.03	0.04	0.03	0.03	0.01	0.01	0.03	0.00	0.00
	Neomycin	-	0.10	0.17	0.15	0.13	0.11	0.10	0.08	0.10	0.08
	Paromomycin	0.01	0.01	0.02	0.03	0.05	0.09	0.10	0.09	0.15	0.12
	Spectinomycin	0.21	0.24	0.23	0.22	0.23	0.18	0.16	0.14	0.14	0.13
Amphenicols	Florfenicol	0.36	0.39	0.38	0.40	0.52	0.54	0.38	0.42	0.37	0.31
Cephalosporins	Cefquinome	-	0.00	0.00	-	-	-	-	-	-	-
	Ceftiofur	0.00	0.00	0.00	-	-	-	-	-	-	-
Lincosamides	Lincomycin	0.38	0.38	0.37	0.38	0.42	0.40	0.38	0.35	0.09	0.24
Macrolides	Gamithromycin	0.51	1.19	1.32	1.35	1.40	1.01	0.86	0.73	0.49	0.37
	Spiramycin	0.00	-	-	-	-	-	-	-	-	-
	Tildipirosin	0.28	0.19	0.19	0.15	0.13	0.10	0.07	0.08	0.06	0.04
	Tilmicosin	0.14	0.14	0.16	0.09	0.08	0.06	0.04	0.03	0.02	0.02
	Tulathromycin	1.88	1.61	1.50	1.32	1.38	1.38	1.71	2.20	2.36	2.40
	Tylosin	0.23	0.20	0.17	0.19	0.31	0.39	0.39	0.37	0.30	0.21
	Tylvalosin	0.00	0.01	0.06	0.05	0.02	0.00	0.00	0.00	0.00	0.00
Other antimicrobials	Colistin	0.36	0.12	0.00	0.00	0.00	-	-	-	-	-
Penicillins, beta-lactamase-sensitive	Benzylpenicillin	0.04	0.00	-	-	-	-	-	-	-	-
	Penethamate hydriodide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Procaine benzylpenicillin	5.62	5.70	5.79	5.90	6.37	6.47	6.43	6.81	6.85	6.86
Penicillins, others	Amoxicillin	2.33	2.40	2.32	2.25	2.27	1.97	1.64	1.58	1.53	1.36
	Amoxicillin (beta-lactamase inhibitor)	0.09	0.06	0.09	0.08	0.11	0.09	0.10	0.06	0.04	0.05
Pleuromutilins	Tiamulin	1.87	1.38	1.76	1.61	1.17	2.18	1.04	0.99	1.17	0.97
	Valnemulin	-	0.00	-	-	-	-	-	-	-	-
Sulfonamides and trimethoprim	Sulfadiazine	1.93	1.83	1.65	1.64	0.66	-	-	0.00	0.51	1.42
	Sulfadoxine	0.63	0.65	0.74	0.72	1.57	2.15	2.11	2.19	1.68	0.78
	Sulfamethoxazole	0.00	0.01	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.01
	Trimethoprim	0.51	0.50	0.48	0.47	0.45	0.43	0.42	0.44	0.44	0.44
Tetracyclines	Chlortetracycline	0.04	0.03	0.04	0.03	0.03	0.06	0.03	0.03	0.03	0.02
	Doxycycline	0.22	0.13	0.15	0.11	0.08	0.07	0.14	0.14	0.06	0.03
	Oxytetracycline	1.88	1.42	1.20	1.17	1.18	1.18	1.21	1.27	1.31	1.31
Weaners, =<30 kg											
Aminoglycosides	Apramycin	0.69	0.66	0.61	0.89	1.27	1.64	3.61	13.85	13.18	11.36
	Dihydrostreptomycin	1.07	1.07	1.04	1.25	1.41	1.43	1.27	1.51	1.45	1.52
	Gentamicin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-
	Neomycin	-	2.69	6.19	6.18	5.78	5.89	11.54	14.67	12.95	12.46
	Paromomycin	0.07	0.04	0.06	0.08	0.08	0.12	0.15	0.18	0.20	0.16
	Spectinomycin	4.29	5.61	4.80	4.94	5.01	4.94	5.95	6.58	6.81	7.55
Amphenicols	Florfenicol	0.37	0.35	0.35	0.51	0.58	1.08	1.04	1.29	0.79	0.95
Cephalosporins	Cefquinome	0.00	0.00	-	-	-	-	-	-	-	-
	Ceftiofur	0.00	-	0.00	0.00	0.00	-	-	-	-	-
Lincosamides	Lincomycin	2.33	2.84	2.45	2.52	2.57	2.53	3.03	3.33	3.40	3.79
Macrolides	Gamithromycin	0.41	0.98	0.91	1.30	1.69	1.21	0.89	0.68	0.64	0.55
	Tildipirosin	0.35	0.26	0.22	0.23	0.24	0.20	0.14	0.13	0.11	0.10
	Tilmicosin	4.97	5.29	5.06	5.88	6.40	6.49	5.28	5.55	4.95	5.30
	Tulathromycin	1.04	1.08	0.89	0.89	1.00	1.15	1.32	2.07	2.55	3.27
	Tylosin	14.75	18.90	17.81	18.05	16.38	16.54	15.88	17.19	16.40	18.18
	Tylvalosin	1.25	3.07	4.34	4.49	3.97	3.57	4.30	5.51	5.20	5.39

DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

continued ... Table 4.2 Antimicrobial consumption in each age group of pig production at antimicrobial class and active compound level, DAPD, Denmark, 2016-2025 DANMAP 2025

Antimicrobial class	Active compound	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
continued ... Weaners, =<30 kg											
Other antimicrobials	Colistin	8.21	3.14	0.01	-	-	-	-	-	-	-
Penicillins, beta-lactamase-sensitive	Benzylpenicillin	0.07	0.00	-	-	-	-	-	-	-	-
	Penethamate hydriodide	0.00	-	0.00	-	-	-	-	-	-	-
	Procaine benzylpenicillin	2.96	3.46	3.45	4.13	4.30	4.54	4.01	4.59	4.50	4.28
Penicillins, others	Amoxicillin	6.81	8.25	8.37	8.65	10.26	9.71	8.09	8.50	9.74	8.97
	Amoxicillin (beta-lactamase inhibitor)	0.77	0.47	0.21	0.24	0.54	0.67	0.94	0.84	0.96	2.06
	Ampicillin	0.00	-	-	-	-	-	-	-	-	-
Pleuromutilins	Tiamulin	15.65	16.12	14.99	14.86	13.27	12.78	10.82	11.81	10.71	9.86
	Valnemulin	0.09	0.65	0.37	0.20	0.15	0.01	-	-	-	-
Sulfonamides and trimethoprim	Sulfadiazine	0.88	0.99	0.57	0.63	0.24	0.01	-	-	0.64	1.15
	Sulfadoxine	0.23	0.24	0.28	0.36	0.61	0.87	1.09	1.48	1.27	0.79
	Sulfamethoxazole	0.69	0.65	0.54	0.51	0.45	0.25	0.19	0.17	0.15	0.18
	Trimethoprim	0.36	0.38	0.28	0.30	0.26	0.23	0.26	0.33	0.41	0.42
Tetracyclines	Chlortetracycline	5.28	4.07	3.47	3.29	2.66	2.07	1.16	0.98	0.80	0.94
	Doxycycline	22.26	14.02	12.07	11.55	11.43	11.99	12.39	14.04	12.82	13.15
	Oxytetracycline	4.29	4.13	3.55	3.71	3.17	3.05	3.05	3.48	3.47	3.31
Finishers and polts											
Aminoglycosides	Apramycin	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Dihydrostreptomycin	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.01
	Gentamicin	-	-	-	-	0.00	-	-	-	0.00	-
	Neomycin	-	0.00	0.01	0.02	0.03	0.03	0.01	0.02	0.03	0.02
	Paromomycin	-	0.00	-	0.00	0.00	-	-	0.00	-	-
	Spectinomycin	0.08	0.12	0.08	0.06	0.04	0.03	0.02	0.02	0.03	0.03
Amphenicols	Florfenicol	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.02	0.03	0.01
Cephalosporins	Ceftiofur	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-
Lincosamides	Lincomycin	0.65	0.69	0.65	0.60	0.64	0.59	0.55	0.55	0.06	0.37
Macrolides	Gamithromycin	0.01	0.02	0.02	0.03	0.03	0.02	0.01	0.01	0.02	0.02
	Tildipirosin	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Tilmicosin	0.05	0.06	0.06	0.07	0.07	0.05	0.05	0.01	0.01	0.02
	Tulathromycin	0.02	0.03	0.02	0.02	0.04	0.02	0.02	0.03	0.06	0.09
	Tylosin	3.05	3.39	3.56	3.48	3.17	2.99	3.03	3.34	3.00	3.45
	Tylvalosin	0.37	0.73	0.92	1.10	0.98	0.82	1.18	1.91	1.76	2.00
Other antimicrobials	Colistin	0.03	0.01	-	-	-	-	-	-	-	-
Penicillins, beta-lactamase-sensitive	Benzylpenicillin	0.00	-	-	-	-	-	-	-	-	-
	Penethamate hydriodide	-	-	0.00	-	-	-	-	-	-	-
	Procaine benzylpenicillin	3.38	3.52	3.64	3.96	4.20	4.18	4.19	4.70	4.50	4.65
Penicillins, others	Amoxicillin	0.48	0.49	0.45	0.49	0.61	0.46	0.37	0.53	0.46	0.47
	Amoxicillin (beta-lactamase inhibitor)	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Pleuromutilins	Tiamulin	6.38	6.68	6.25	6.26	6.35	5.72	5.52	5.94	4.97	5.40
	Valnemulin	0.01	0.07	0.12	0.14	0.07	0.00	-	-	-	-
Sulfonamides and trimethoprim	Sulfadiazine	0.03	0.02	0.02	0.03	0.01	-	0.00	-	0.00	0.01
	Sulfadoxine	0.01	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01
	Sulfamethoxazole	0.04	0.04	0.05	0.04	0.02	0.02	0.02	0.03	0.01	0.00
	Trimethoprim	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Tetracyclines	Chlortetracycline	0.80	0.59	0.46	0.43	0.34	0.22	0.14	0.08	0.08	0.08
	Doxycycline	3.10	1.88	1.37	1.15	1.18	1.09	1.30	1.56	1.51	1.54
	Oxytetracycline	1.22	1.10	0.80	0.83	0.74	0.62	0.66	0.78	0.72	0.72

DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

4.3.2 Antimicrobial consumption in cattle

In 2025, approximately 8.20 tonnes of active antimicrobial compounds were recorded for use in cattle, representing a decrease of 0.72% compared to 2024 (Table 4.1). During the same period, the estimated live biomass of cattle decreased by 1.05%.

Of this amount, approximately 0.46 tonnes were used for intramammary therapeutic purposes or dry-cow treatment. Approximately 2.84 tonnes of antimicrobials were used for systemic treatment in young cattle (<1 year), with the remaining 4.90 tonnes used in adult cattle (>1 year) (Table 4.1).

Except for 2024, systemic antimicrobial consumption in adult cattle declined over the past decade: it was 3.41 DAPD in 2016 and 2.73 DAPD in 2024. In 2025, the DAPD was 2.64, thus a 3.29% decline compared to 2024 (Figure 4.5). During the same period, systemic antimicrobial consumption in young cattle increased until 2024 (8.13 DAPD). In 2025, the use for young cattle increased by 4.30% compared to 2024. The estimated live biomass of young cattle declined by approximately 1.00% in the same period.

In 2025, it is estimated that on any given day approximately 0.26% of adult cattle and 0.85% of young cattle were treated with systemic antimicrobials.

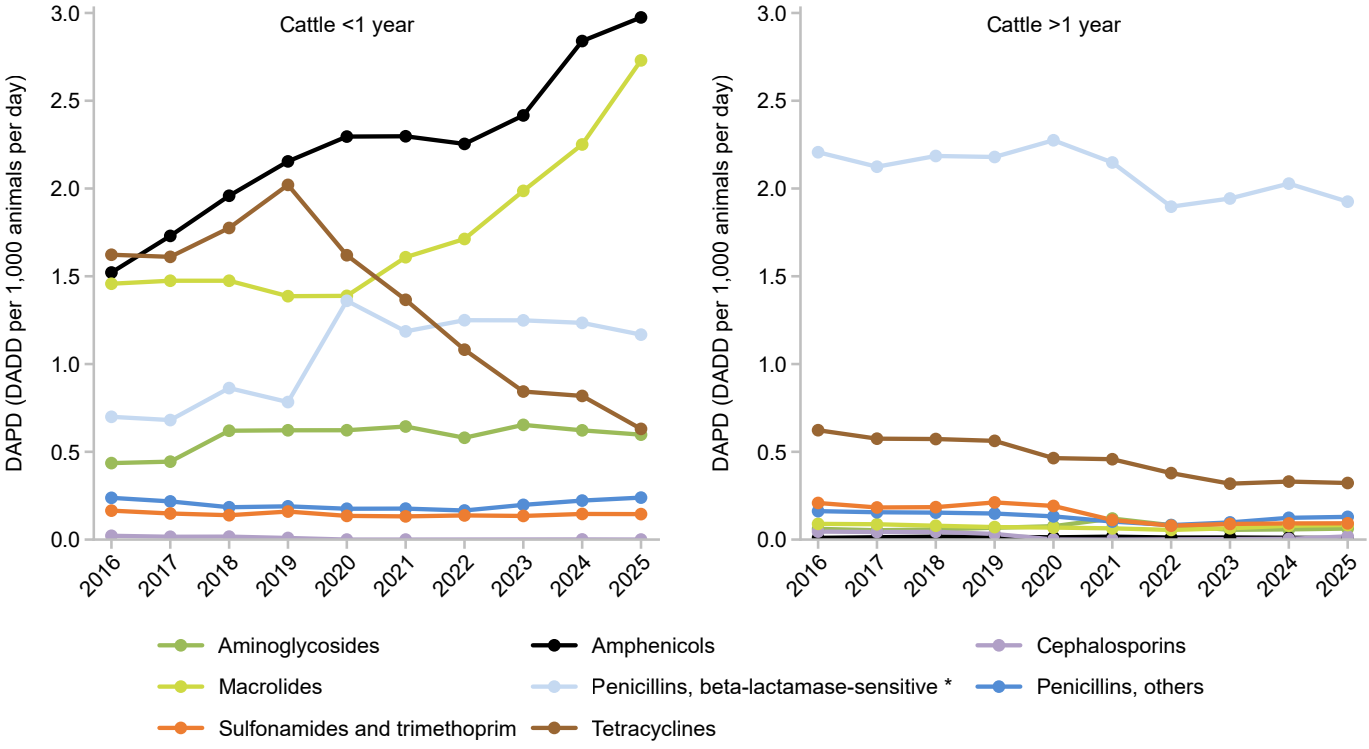
Among adult cattle, the change from 2024 to 2025 in DAPD values showed increased usage of cephalosporins (334.18%), lincosamides (56.77%), aminoglycosides (8.08%), macrolides (4.74%) and other penicillins (4.35%). In contrast, amphenicol use decreased by 18.45%, beta-lactamase-sensitive penicillins by 5.06% and tetracyclines by 2.44%. In 2025, treatments with beta-lactamase-sensitive penicillins accounted for 72.87% of the total DAPD (Figure 4.5).

In young cattle, the change from 2024 to 2025 in DAPD values showed increased usage of macrolides (21.29%), other penicillins (7.60%) and amphenicols (4.73%), while lincosamides decreased by 28.48%, tetracyclines by 22.94%, beta-lactamase-sensitive penicillins by 5.44% and aminoglycosides by 3.95% (Figure 4.5).

In 2025, the most frequently used active compounds for systemic treatments in adult cattle were procaine benzylpenicillin and oxytetracycline. Among young cattle, the most frequently used compounds were florfenicol, tulathromycin and procaine benzylpenicillin (Table 4.3).

Figure 4.5 Systemic antimicrobial consumption in cattle production by age groups at antimicrobial class level, Denmark, 2016-2025

DANMAP 2025



* Please note that the reported level differs noticeably from DANMAP reports before 2024 due to DADD revisions.
DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Intramammary applications are not included (since it is calculated as DADDs per dairy cow, not DAPD).
The DAPDs of amphenicols in cattle <1 year differ from reports before 2021, due to missing data in the old VetStat.
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.

Table 4.3 Systemic antimicrobial consumption in each age group of cattle production at antimicrobial class and active compound level, DAPD, Denmark, 2016-2025 DANMAP 2025

Antimicrobial class	Active compound	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cattle <1 year											
Aminoglycosides	Apramycin	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.01	0.01
	Dihydrostreptomycin	0.17	0.15	0.22	0.20	0.18	0.16	0.16	0.23	0.20	0.18
	Neomycin	-	0.01	0.00	0.00	0.01	0.00	0.00	-	0.00	0.00
	Paromomycin	0.25	0.28	0.38	0.41	0.42	0.47	0.41	0.39	0.41	0.41
	Spectinomycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Amphenicols	Florfenicol	1.52	1.73	1.96	2.15	2.30	2.30	2.25	2.42	2.84	2.97
Cephalosporins	Cefalexin	-	-	-	-	-	-	-	-	-	0.00
	Cefquinome	0.01	0.01	0.01	0.01	0.00	0.00	-	-	-	-
	Ceftiofur	0.01	0.01	0.01	0.00	0.00	-	-	-	0.00	-
Lincosamides	Lincomycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macrolides	Gamithromycin	0.11	0.13	0.12	0.10	0.12	0.12	0.06	0.05	0.04	0.04
	Spiramycin	0.00	0.00	-	0.00	-	-	-	-	-	-
	Tildipirosin	0.41	0.43	0.46	0.43	0.39	0.34	0.20	0.07	0.04	0.02
	Tilmicosin	0.14	0.13	0.14	0.10	0.14	0.17	0.14	0.08	0.11	0.06
	Tulathromycin	0.73	0.73	0.69	0.69	0.69	0.94	1.27	1.69	1.99	2.28
	Tylosin	0.07	0.05	0.06	0.06	0.05	0.04	0.05	0.10	0.06	0.32
Other antimicrobials	Colistin	0.07	0.03	0.02	0.01	-	-	-	-	-	-
Penicillins, beta-lactamase-sensitive	Benzylpenicillin	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Penethamate hydriodide	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00
	Procaine benzylpenicillin	0.68	0.68	0.86	0.78	1.35	1.18	1.25	1.24	1.23	1.16
Penicillins, others	Amoxicillin	0.21	0.20	0.17	0.18	0.17	0.17	0.16	0.19	0.22	0.23
	Amoxicillin (beta-lactamase inhibitor)	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Ampicillin	0.00	-	-	0.00	-	-	-	-	-	-
Sulfonamides and trimethoprim	Sulfadiazine	0.12	0.11	0.10	0.12	0.06	0.01	0.00	0.00	0.03	0.04
	Sulfadoxine	0.02	0.01	0.02	0.02	0.05	0.10	0.11	0.11	0.09	0.09
	Sulfamethoxazole	-	-	-	0.00	-	-	-	-	-	-
	Trimethoprim	0.03	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Tetracyclines	Chlortetracycline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Doxycycline	0.25	0.27	0.31	0.47	0.37	0.27	0.18	0.10	0.12	0.09
	Oxytetracycline	1.37	1.34	1.47	1.55	1.25	1.09	0.90	0.74	0.70	0.54
Cattle >1 year											
Aminoglycosides	Apramycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
	Dihydrostreptomycin	0.06	0.05	0.06	0.06	0.07	0.12	0.08	0.05	0.06	0.06
	Gentamicin	-	-	-	-	0.00	-	-	-	-	-
	Neomycin	-	-	-	0.00	0.00	0.00	0.00	-	-	-
	Paromomycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Spectinomycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Amphenicols	Florfenicol	0.01	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01
Cephalosporins	Cefalexin	-	-	-	-	-	-	-	-	0.00	0.02
	Cefquinome	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-
	Ceftiofur	0.04	0.04	0.04	0.03	0.00	0.00	-	-	0.00	0.00
Lincosamides	Lincomycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macrolides	Gamithromycin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Spiramycin	0.00	0.00	0.00	-	-	-	-	-	-	-
	Tildipirosin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tilmicosin	-	0.00	-	0.00	0.00	0.00	-	-	-	-
	Tulathromycin	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Tylosin	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.06	0.06	0.07
Other antimicrobials	Colistin	0.00	0.00	0.00	0.00	-	-	-	-	-	-

DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Intramammary applications are not included (since it is calculated as DADDs per dairy cow, not DAPD).
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

continued ... Table 4.3 Antimicrobial consumption in each age group of cattle production at antimicrobial class and active compound level, DAPD, using new DADD, Denmark, 2016-2025 DANMAP 2025

Antimicrobial class	Active compound	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
continued ... Cattle >1 year											
Penicillins, beta-lactamase-sensitive	Benzylpenicillin	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02
	Penethamate hydriodide	0.10	0.15	0.17	0.18	0.18	0.17	0.18	0.20	0.21	0.20
	Procaine benzylpenicillin	2.10	1.97	2.01	2.00	2.09	1.97	1.70	1.73	1.81	1.71
Penicillins, others	Amoxicillin	0.16	0.16	0.15	0.15	0.13	0.10	0.08	0.10	0.12	0.13
	Amoxicillin (beta-lactamase inhibitor)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Ampicillin	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-
Pleuromutilins	Tiamulin	-	-	-	-	-	-	-	-	0.00	-
Sulfonamides and trimethoprim	Sulfadiazine	0.16	0.14	0.14	0.16	0.06	0.00	0.00	0.00	0.02	0.04
	Sulfadoxine	0.02	0.02	0.02	0.02	0.10	0.09	0.07	0.07	0.06	0.04
	Trimethoprim	0.03	0.03	0.03	0.04	0.03	0.02	0.01	0.01	0.02	0.02
Tetracyclines	Chlortetracycline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Doxycycline	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	-	-
	Oxytetracycline	0.62	0.57	0.56	0.55	0.46	0.45	0.38	0.32	0.33	0.32

DAPDs are calculated as the number of standard doses for one kg animal divided by the estimated live biomass in the age group or the total population (in tonnes).
Intramammary applications are not included (since it is calculated as DADDs per dairy cow, not DAPD).
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

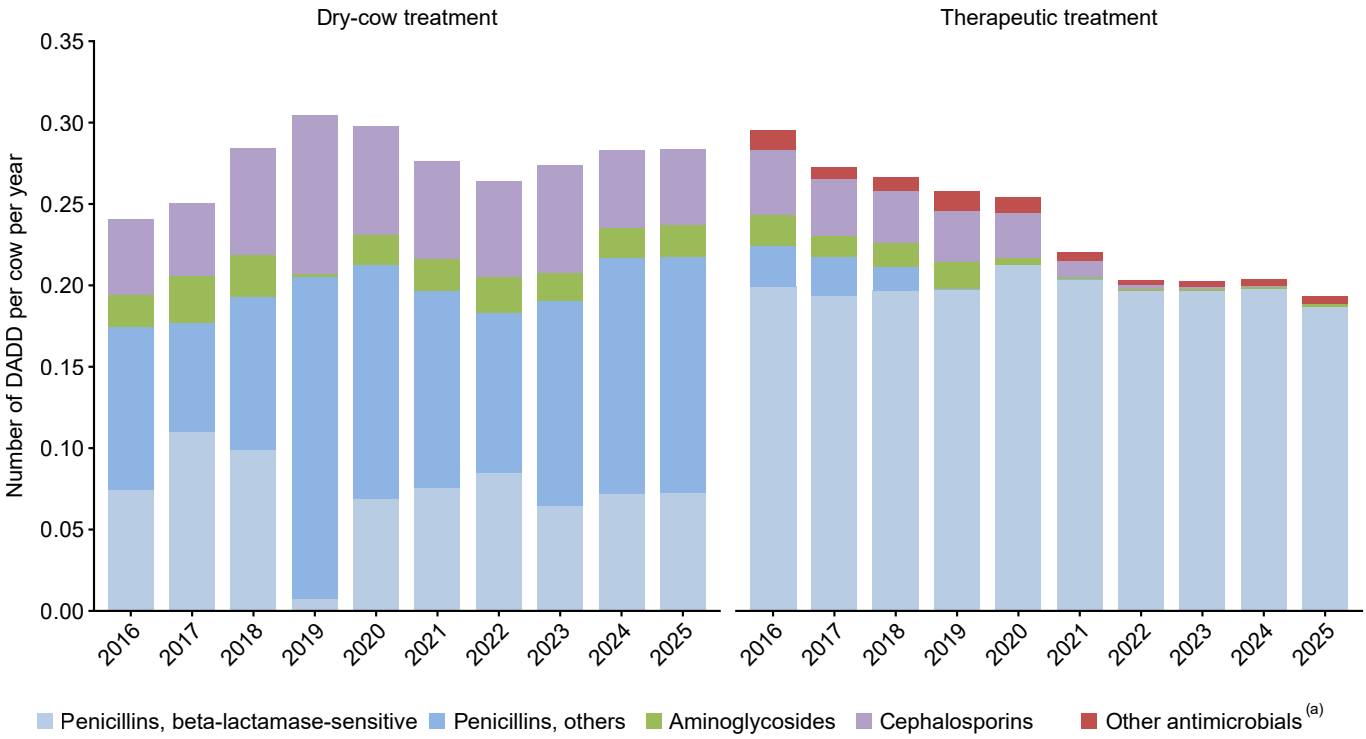
The consumption of intramammary treatments, measured as DADD per cow per year, is presented in Figure 4.6. From 2016 to 2024, usage declined by 9.08%, and in 2025 usage declined by 2.13% compared to 2024.

In 2019, a notable shift occurred in dry-cow treatments: the use of beta-lactamase-sensitive penicillins for this purpose almost ceased, while the use of other penicillins, particularly cloxacillin, increased substantially. This shift resulted from a product shortage in which the primary beta-lactamase-sensitive penicillins for dry-cow treatment were unavailable for extended periods during 2019. Consequently, other penicillins, especially products containing cloxacillin, had to be used as alternatives [Personal communication; Michael Farre, Danish Agriculture and Food Council] (Figure 4.6).

In 2025, other penicillins remained the most frequently used antimicrobials for dry-cow treatment, accounting for 51.31% of this use, followed by beta-lactamase-sensitive penicillins at 25.61% (Figure 4.6).

For therapeutic intramammary treatments, beta-lactamase-sensitive penicillins remained the dominant antimicrobial class from 2016 to 2024, and in 2025, they accounted for 96.89% of all therapeutic intramammary treatments.

Figure 4.6 Consumption of antimicrobials for intramammary application in cattle, Denmark, 2016-2025 DANMAP 2025



For intramammary therapeutic treatments, 1 DADD is defined as the dose to treat two teats for 24 hours. For dry-cow treatment, 1 DADD is defined as the dose to treat four teats.
Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
a) Includes lincomycin for dry-cow treatments. For therapeutic treatments, mainly sulfonamides and trimethoprim, but also lincomycin and bacitracin.

4.3.3 Antimicrobial consumption in poultry

Poultry production in Denmark comprises broiler chickens, laying hens, and turkeys, supplemented by smaller-scale farming involving ducks, geese, and game birds. Among these sectors, conventional broiler production is characterized by stringent biosecurity protocols, which contribute to comparatively low antimicrobial usage relative to other livestock sectors. However, due to the low overall baseline usage, disease outbreaks on a limited number of farms can have a substantial influence on national antimicrobial consumption statistics (Table 4.4).

Marked fluctuations in antimicrobial usage, both increases and decreases, are frequently attributable to disease outbreaks affecting multiple flocks within a single production unit [personal communication; Susanne Kabel, Danish Agriculture and Food Council].

Historically, the Danish VetStat surveillance system lacked the resolution to disaggregate antimicrobial usage data by specific poultry production types. This limitation was addressed through the revised VetStat system, which has enabled more granular reporting since June 2021. As longitudinal data accumulates, this enhancement will facilitate more precise monitoring of antimicrobial usage trends across distinct poultry production categories.

In 2025, total antimicrobial consumption in the poultry sector increased by 17.95% in terms of kilograms of active compound compared to 2024. By antimicrobial class, the use of pleuromutilins decreased by 99.13%, macrolides by 22.50%, and lincosamides by 1.98%, while the usage of beta-lactamase-sensitive penicillins increased by 66.39%, aminoglycosides by 64.64%, sulfonamides and trimethoprim by 38.84%, tetracyclines by 23.80%, and other penicillins by 12.63% (Table 4.4).

Table 4.4 Consumption of antimicrobials in poultry, kg active compound, Denmark, 2016-2025 DANMAP 2025

	Aminoglycosides	Amphenicols	Fluoroquinolones	Lincosamides	Macrolides	Other antimicrobials [a]	Other quinolones	Penicillins, beta-lactamase-sensitive	Penicillins, others	Pleuromutilins	Sulfonamides and trimethoprim	Tetracyclines	Total
2016	60.19	4.83	-	23.77	175.58	8.00	-	264.55	257.65	0.38	111.00	764.56	1670.51
2017	64.87	5.06	-	31.75	244.87	-	1.00	355.55	334.77	0.45	84.60	487.45	1610.37
2018	50.56	-	-	25.28	194.95	-	-	357.82	242.58	0.82	36.60	521.12	1429.73
2019	54.80	0.23	0.01	27.36	274.83	-	-	368.37	234.30	0.64	64.25	694.27	1719.07
2020	58.19	-	-	29.01	156.91	-	-	334.10	237.34	0.22	54.60	1590.93	2461.31
2021	58.87	-	-	27.69	168.64	-	-	115.38	204.10	0.38	34.80	656.61	1266.46
2022	50.42	-	-	14.98	433.96	-	-	232.70	139.88	19.38	12.60	442.43	1346.35
2023	50.23	-	-	15.28	176.34	-	-	315.90	203.06	16.88	31.20	496.92	1305.80
2024	51.15	-	-	21.65	232.94	-	-	155.68	302.75	14.38	72.60	289.78	1140.92
2025	84.21	-	-	21.22	180.54	-	-	259.02	341.00	0.12	100.80	358.76	1345.67

Data for 2025 were extracted from VetStat on 31 July 2026.
Combination drugs are divided into active compounds.
a) Other antibacterials also include other polymyxins.
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

4.3.4 Antimicrobial consumption in aquaculture, fur animals, and companion animals

Aquaculture

Antimicrobial consumption in aquaculture is mainly driven by summer air temperature and the number of hours of sunlight, because bacterial diseases are more likely to occur when water temperatures are high [Villumsen and Bojesen, 2022. Microbiol Spectr. 10(5):e0175222]. Although the aquaculture production continues to focus on developing improved vaccination strategies to reduce the risk of bacterial diseases requiring antimicrobial treatment, antimicrobial use varies significantly from year to year. In 2025, antimicrobial consumption decreased by 27.82% compared to the average consumption over the previous five years. The decrease was primarily due to decreased usage of combination products of sulfonamides and trimethoprim (Table 4.5).

In 2025, three antimicrobial classes were used to treat bacterial infections in aquaculture: 70.83% of sulfonamides and trimethoprim, 20.02% of other quinolones (oxolinic acid), and 8.90% of amphenicols (florfenicol) (Table 4.5).

Companion animals - horses and pets

The information available on antimicrobial consumption in companion animals is less precise than that available for production animals, since veterinarians are not required to report antimicrobial use for these animal species in VetStat. Table 4.6 shows the antimicrobial consumption registered for companion animals in three categories: Horses, Pets, and Unspecified.

The total amount of antimicrobials estimated for consumption in companion animals in 2025 was 2127.70 kg (Table 4.1 and 4.6). As in previous years, a substantial amount of sulfonamides and trimethoprim registered as used for pets or unspecified is an oral paste, a product normally used for horses. Thus, a substantial amount of sulfonamide/trimethoprim included in Table 4.6 is likely to have been used for horses (1114.05 kg in 2025).

A large proportion of antimicrobials for dogs and cats are prescribed for the treatment of chronic or recurrent diseases, mainly dermatitis. Due to the close contact between owners and their pets, repeated use of critically important antimicrobials may pose a risk to the owners, and the use of these antimicrobials is therefore monitored carefully.

Since the treatment guidelines by DVA were published in 2012 (revised in 2018), the use of cephalosporins has been reduced from 272.70 kg in 2012 to 42.03 kg of active compound in 2025. Pets accounted for 42.04% of all the cephalosporins consumed in animals (Table 4.1 and 4.6).

In 2025, the consumption of fluoroquinolones in companion animals, mainly dogs and cats, was 12.75 kg active compound (Table 4.1 and 4.6).

Table 4.5 Consumption of antimicrobials in aquaculture, kg active compound, Denmark, 2016-2025 DANMAP 2025

	Aminoglycosides	Amphenicols	Other antibacterials [a]	Other quinolones	Penicillins, beta-lactamase-sensitive	Penicillins, others	Sulfonamides and trimethoprim	Tetracyclines	Total
2016	-	315.34	-	893.07	-	13.55	1085.88	0.40	2308.24
2017	-	350.26	-	636.81	0.04	35.02	679.34	0.10	1701.57
2018	-	323.47	-	899.34	-	51.58	2292.56	0.50	3567.45
2019	-	292.56	-	446.88	-	43.90	1720.93	22.00	2526.28
2020	-	341.19	-	565.26	-	27.05	1030.20	1.00	1964.70
2021	-	295.42	0.12	366.33	1.71	19.50	1088.90	1.42	1773.39
2022	-	143.85	-	366.53	-	-	1940.76	0.60	2451.74
2023	-	124.93	-	523.98	-	-	931.70	-	1580.61
2024	8.40	134.83	-	316.78	-	-	1352.08	-	1812.09
2025	1.40	123.10	-	277.00	-	-	979.85	2.00	1383.35

Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
a) Other antibacterials also include lincosamides.
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

Table 4.6 Estimated consumption of antimicrobials for horses, pets and unspecified animals, kg active compound, Denmark, 2016-2025

DANMAP 2025

	Aminoglycosides	Amphenicols	Cephalosporins	Fluoroquinolones	Lincosamides	Macrolides	Other antimicrobials [a]	Other quinolones	Penicillins, beta-lactamase-sensitive	Penicillins, others	Pleuromutilins	Sulfonamides and trimethoprim	Tetracyclines	Total
Horses														
2016	0.78	-	0.13	0.01	-	-	0.01	-	5.21	0.02	-	108.02	5.30	119.48
2017	0.86	0.09	0.11	0.00	-	-	0.01	-	5.38	0.06	-	106.44	2.98	115.93
2018	0.70	0.04	0.15	-	-	0.08	0.02	-	5.96	0.01	-	100.56	3.78	111.31
2019	0.95	-	0.08	0.00	-	0.02	0.01	-	4.92	0.09	-	94.19	3.82	104.08
2020	1.71	-	0.00	0.00	-	-	0.01	-	5.32	0.03	-	111.46	3.52	122.05
2021	0.20	-	0.01	0.00	0.00	0.02	0.05	-	5.19	0.13	-	106.03	1.99	113.61
2022	0.35	0.00	0.04	0.00	0.02	1.00	0.15	-	5.07	0.39	-	137.09	7.32	151.43
2023	0.30	0.00	0.01	0.02	0.01	-	0.24	-	5.91	0.57	-	167.02	7.67	181.75
2024	0.61	-	0.02	0.00	0.00	0.01	0.15	-	6.72	0.17	-	166.84	6.88	181.39
2025	4.01	0.00	0.02	0.00	0.00	-	0.21	-	7.04	0.22	-	174.22	14.24	199.97
Pets														
2016	3.39	0.43	55.31	5.38	21.78	2.31	1.46	0.06	9.81	131.16	0.25	269.09	21.49	521.91
2017	3.80	0.70	41.70	5.22	18.38	1.66	2.18	-	9.16	125.79	0.12	272.44	19.34	500.49
2018	3.93	0.28	35.86	4.94	17.51	1.66	5.98	1.00	10.00	113.72	0.50	253.22	21.12	469.71
2019	3.73	0.26	32.33	4.45	17.19	7.35	6.08	-	10.35	108.43	0.62	236.83	14.79	442.42
2020	4.34	0.56	30.68	5.06	19.07	3.84	7.52	-	12.88	103.42	0.50	262.32	17.75	467.92
2021	3.20	0.67	27.98	4.74	19.25	2.16	9.34	-	11.46	100.15	0.12	270.77	23.66	473.50
2022	1.69	0.01	22.30	3.87	16.48	0.23	10.51	-	9.39	79.53	0.12	165.50	22.26	331.89
2023	2.21	0.64	21.56	4.31	17.72	2.19	10.15	-	10.02	86.54	0.16	194.37	18.81	368.68
2024	1.38	0.12	16.69	4.15	16.88	0.36	10.29	-	8.45	89.17	0.12	206.62	18.34	372.57
2025	1.73	0.22	17.24	4.11	16.39	0.36	10.30	-	7.82	80.28	0.38	158.00	22.67	319.49
Unspecified														
2016	37.45	0.38	81.64	9.71	48.91	0.27	2.72	-	2.21	455.07	-	1015.35	17.02	1670.73
2017	33.22	0.21	69.14	9.27	50.12	0.00	5.24	-	1.94	456.72	-	1071.67	14.71	1712.25
2018	36.52	1.32	61.41	9.76	45.80	-	11.75	-	1.84	441.45	-	1136.63	12.96	1759.42
2019	35.36	0.23	60.64	9.87	48.83	0.13	14.05	-	1.90	434.53	0.12	1140.68	16.04	1762.40
2020	28.29	0.42	56.90	10.70	52.24	0.06	15.84	-	2.90	440.04	-	1221.66	15.65	1844.69
2021	21.40	0.39	49.36	10.11	57.52	-	20.86	-	0.79	451.35	-	1284.34	14.46	1910.59
2022	1.28	0.40	38.82	8.76	54.30	-	24.94	-	-	389.36	-	1100.12	11.94	1629.92
2023	1.04	0.41	36.93	8.73	55.63	-	22.99	-	-	385.05	-	1233.67	12.82	1757.26
2024	0.91	0.39	29.29	8.83	58.61	-	19.28	-	-	381.47	-	1202.96	12.85	1714.60
2025	0.66	0.37	24.77	8.64	56.24	-	18.46	-	-	372.49	-	1114.05	12.56	1608.24

Data for 2025 were extracted from VetStat on 31 July 2026.
Combination products are split into active compounds.
The estimates include all veterinary approved antimicrobials for use in horses, pets, as well as products without a specified animal species (unknown).
a) Other antibacterials also include other otologicals, pleuromutilins, polymyxins, and sulfonamides (plain).
A dash (-) indicates no antimicrobial usage, and 0.00 indicates a consumption less than 0.005.

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Textbox 4.1

VetStat: 25 Years of Monitoring Veterinary Antimicrobial Use

The overall purpose of the Danish database VetStat is to support the monitoring and prudent use of veterinary medicinal products through the collection of data on prescription medicine use, thereby contributing to the fight against antimicrobial resistance and promoting a One Health approach. VetStat has been in operation for 25 years. Over time, it has evolved from a research database into a cornerstone of Danish surveillance of veterinary antimicrobial use and an essential data source for DANMAP and international reporting.

Establishment of VetStat

A national register to collect data on veterinary use of prescription medicine was conceived in the late 1990s following the phase-out of antimicrobial growth promoters in the Danish animal production, partly to monitor trends in antimicrobial use. VetStat was subsequently developed in 1999 by the Danish Technical University (DTU) and launched in 2000. Initially, the database and its data were maintained by DTU and the main use of data was for research purposes, including the relationship between antimicrobial use and antimicrobial resistance, and as the foundation for DANMAP's chapters on antimicrobial use.

From Research Tool to Regulatory Instrument

After a rise in the veterinary use of antibiotics up throughout the 2000s it was decided, that the data in VetStat should be used more actively in policy making and initiatives. As a result, the responsibility for maintaining VetStat and its data was transferred from DTU to the Danish Veterinary and Food Administration (DVFA) in 2011. One of the most prominent examples of the regulatory use of VetStat data was the Yellow Card Initiative, targeting the highest users of antibiotics in the Danish pig production. VetStat also became an important tool for monitoring progress in national efforts to reduce antimicrobial use in animal production. Even though the responsibility was transferred from academia to the public sector, the data in VetStat continued and continues to play a key role in DANMAP and academic research into national antimicrobial use and resistance.

Modernization and Improved Data Quality

In 2017 it was decided that VetStat required modernization, both in terms of the user interface, improving data quality, balancing data access, and complying with increasing IT security demands. Additionally, it was decided to merge VetStat with the DVFA's register of authorized veterinarians, VetReg, to support data validation and user access management. The modernization of VetStat took place from 2018 to 2021 and the new platform was launched on 1 June 2021. Among other things, the modernized platform introduced improved data granularity regarding where medicine is being used, data quality validation, and improved data on intended animal species - especially for poultry and aquaculture. Even after its launch, New VetStat has continuously been improved and refined to enhance data quality, provide greater insights on medicine use, and support evolving regulatory needs.

Future Developments and Reporting Requirements

Apart from data in VetStat being used nationally in DANMAP, it also provides the foundation for Denmark's international reporting to the World Organization of Animal Health (WOAH) and to the European Union's European Sales and Use of Antimicrobials for Veterinary Medicine (ESUAvet) initiative. Especially the latter will expand VetStat's coverage of antimicrobial use in horses and companion animals, further strengthening national and international surveillance. ESUAvet will start collecting data on antimicrobial use in horses from 2027 and in companion animals from 2030, meaning that data must be collected in 2026 and 2029, respectively.

VetStat already collects sales data from pharmacies anytime prescription medicine is being sold for use in horses and companion animals; however, the total use data is incomplete, as veterinarians are currently not obligated to report their use of antimicrobials for these animal species. To meet these reporting requirements, equine veterinarians will be required to report their use of antimicrobials from 2027, followed by mandatory reporting for companion animal veterinarians from 2029. Additionally, sales for use in companion animals are currently reported collectively, but as ESUAvet requires antimicrobial use to be specified for dogs and cats, the reporting requirements for companion animals will have to follow suit.

As reporting requirements continue to expand, VetStat will remain a central tool for surveillance, research, and policy development related to veterinary antimicrobial use in Denmark.

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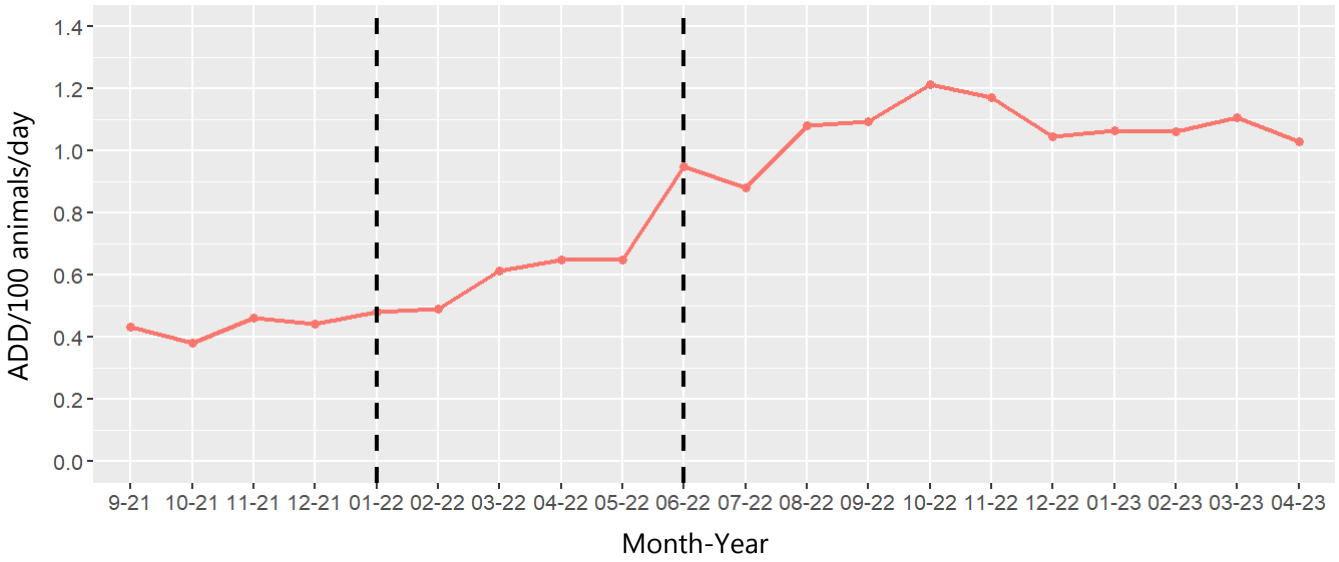
Textbox 4.2

Effect of the new Veterinary Medicinal Products Regulation on the antimicrobial use in Danish Weaners

The new Veterinary Medicinal Product Regulation came into force in January 2022. In June same year, medicinal zinc oxide was phased out and an increase in the national yearly antimicrobial use (AMU) was seen between 2021 and 2022. The increase in AMU was mainly driven by an increase in use of products prescribed for gastrointestinal indications in weaners. Medicinal zinc oxide was widely used in the Danish pig production to prevent post weaning diarrhoea. Thus, it seems reasonable to attribute the increase in AMU to the phasing out of medicinal zinc oxide. However, with the new regulation, the veterinarians were obliged to prescribe antimicrobials in accordance with the Summary of Product Characteristics (SPC). In Denmark, many antimicrobial products were prescribed with a shorter treatment duration than stated in the SPC. This was to keep the AMU as low as possible and below the yellow card limits. With the new regulation, this was not allowed, and the expectation was that the individual farmer would either increase AMU due to a longer treatment duration or change to products with a shorter treatment duration.

VetStat data were analysed to investigate the effect of the new Veterinary Medicinal Products Regulation on AMU for Danish Weaners on a monthly national. Data consisted of all antimicrobial products prescribed for oral administration and gastrointestinal indications in weaners from January 2020 – December 2023. The AMU was measured in ADD per 100 animals per day and the percentage changes in antimicrobial use between 2021 and 2022 were calculated for each product. The project focused on the products with an increase in use above 50% or a decrease in use below 50%. Veterinarians in Danish pig practice were consulted about the previous treatment regimens for the specific products, and this was compared with the requirements in the SPC.

Figure 1 Monthly prescriptions of *Neomay* for gastrointestinal indications in weaners DANMAP 2025



Monthly prescriptions of the antimicrobial product Neomay (active ingredient is Neomycin) in the period from September 2021 to April 2023. National prescriptions are summarised per month and measured in ADD per 100 animals per day. The first dotted line marks the New Veterinary Medicinal Product regulation coming into force (January 2022). The second dotted line marks the phasing out of medicinal zinc oxide (June 2022).

The use of *Doxycyclin "ScanVet" Vet.* increased with 500% from 2021-2022. The products *Apravet, Neomay* and *Lismay* increased with 171%, 121% and 88%, respectively. The use of *Octacillin Vet.* decreased with 79%. The use of *Doxx-Sol* decreased with 91% for gastrointestinal indications, but increased equally for respiratory indications, which is the officially approved indication for *Doxx-Sol*. These changes were observed already before the phasing out of medicinal zinc oxide, which could indicate an effect of the new regulation. The veterinarians who were consulted confirmed that the changes seen could be attributed to the difference between the previous treatment regimens and the SPC for these products. For example, for *Neomay*, the SPC requires a treatment duration of 3-4 days, which according to the veterinarians was previously used in a double dose but only as a one-day treatment. The change in monthly prescriptions for *Neomay* is illustrated in Figure 1.

A further increase was seen after the phasing out of medicinal zinc oxide, which again can be attributed to more farmers implementing longer treatment duration, but also to an increased need for treatment when weaning pigs without the use of medicinal zinc oxide.

This project was part of the veterinary contingency work carried out by the VetStat cluster at University of Copenhagen under the veterinary public service agreement. The results are presented in this report (In Danish): https://dkvet.dk/rapporter/Analyse af veterin rl gemiddelforordningens art. 106 stk 1s p virkning p udviklingen af antibiotikaforbrug til grise.pdf.

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Textbox 4.3

Challenges in quantifying and presenting cattle antimicrobial use: Insights from studies of Danish rosé veal calf farms

Monitoring antimicrobial use (AMU) is essential for antimicrobial stewardship. However, quantifying and presenting AMU can be challenging. Measures such as the weight of active compound and standardised doses are commonly used and related to the population at risk, as in DANMAP. Antimicrobial use is frequently stratified by species, age groups, or indication. Understanding how quantified AMU reflects the underlying on-farm use can provide valuable context for interpreting the reported results.

As part of the PhD project *Improving quantification and understanding of patterns in antimicrobial use in Danish cattle*, VetStat data on antimicrobial sales for cattle were combined with treatment records and observations collected in a field study of Danish rosé veal farms. Experiences from this project are summarised in three key points:

Transparency in quantification methods is crucial
Methods used to quantify AMU vary and, in some cases, differ even when using the same data. For example, data from VetStat form the basis of both DANMAP and VetStat reports, yet the definition and calculations of animal daily doses differ between the two. In VetStat, a daily dose per kilogram live weight of an animal is defined for each unique product, whereas DANMAP defines daily doses for active compounds. Furthermore, the standardised animal is based on an assigned fixed weight in VetStat and on average live weight in DANMAP.

Additional factors that may influence animal daily dose calculations include dosage intervals, age-specific dosing recommendations, and durations of effect that are shorter or longer than one day. The approach to standardising a dose is not always clearly communicated. Consequently, an animal daily dose is the result of a series of methodological decisions, and differences in approach may significantly affect the summarised statistics presented. Transparency regarding methodological choices is therefore essential.

The composition of groups should be considered when making comparisons
AMU can be presented in many ways. Stratification by species, age groups, or indications preserves information that might otherwise be lost in aggregated summaries. Applying meaningful subgroups and maintaining clear, concise, and relevant reporting is a continuous balancing exercise.

Stratification choices can influence comparisons and benchmarking across farms, sectors, and national borders. Age groups provide a relevant example. In VetStat, the group 'calves' includes all animals younger than one year of age and is assigned a standard weight of 200 kg. Calves undergo a substantial weight gain during the first year, which is likely to affect the AMU estimates, as doses for most systemic antibiotics are calculated based on body weight. Using a standard weight is not inherently problematic, as it is merely a standardisation method applied equally across farms. Challenges arise when comparing farms, sectors, production types, and populations with marked differences in age distribution and, consequently, body weight at treatment.

Different treatment patterns can also pose a challenge for comparisons. Different production types or stages of production are often associated with different disorders. In VetStat, treatments for omphalitis (navel infection) and interdigital phlegmon (a hoof infection) are registered in the same indication group but they typically appear at different stages of a calf's life. When comparing AMU, the composition of the population within each stratified group should always be carefully considered.

Standardisation helps identify patterns, but reality is often more complex

Quantifying and standardising allow summaries of complex data across farms, regions, and borders in a more approachable way. This provides valuable insights into overall trends and patterns.

Results from studies in this project showed that the individual farm was an important explanatory factor for both the level of AMU and the way antimicrobials were used. Differences between farms were both visually and statistically significant. Each farm had its own strengths and challenges regarding antimicrobial use. These findings highlight the importance of farmers and local conditions in the ongoing effort to understand and evaluate AMU. The project was part of the veterinary contingency work carried out by the VetStat cluster at University of Copenhagen under the veterinary public service agreement. The project was co-funded by the Danish Cattle Levy Fund.

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