



Veterinary
Medicines
Directorate

Supplementary Material 2 - sales & usage data

UK-VARSS 2021

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S1.1: Sales of veterinary antibiotics for food-producing animals (in mg/kg)

Table S1.1: Active ingredient in mg/kg of antibiotics sold for food-producing animals from 2014 to 2021.

Please note, the figures in the total sales row are rounded to the nearest integer. This explains any discrepancy between the overall total and the classes' totals. Also, because of the heightened interest in and the low use of HP-CIA classes, the sales of fluoroquinolones, third and fourth generation cephalosporins and colistin are presented in a separated section of the table. Total includes all classes (including HP-CIAs).

Antibiotic Class	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
Tetracyclines	26.1	23.6	15.0	13.1	11.7	10.2	10.2	9.6	-63%
Penicillins	11.4	9.8	7.9	7.3	6.7	7.5	8.0	7.6	-33%
Trimethoprim/ Sulphonamides	10.0	9.7	7.0	3.3	3.2	3.5	3.5	3.1	-69%
Aminoglycosides	3.6	3.5	2.2	2.5	2.5	3.4	3.0	3.0	-16%
Macrolides	7.2	5.5	4.0	3.2	2.3	2.3	3.0	2.7	-63%
Pleuromutilins	1.8	2.2	1.4	1.4	1.2	2.1	1.0	0.9	-49%
Lincosamides	1.0	0.9	0.5	0.3	0.4	0.6	0.7	0.5	-46%
Amphenicols	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	48%
1st and 2nd generation cephalosporins	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	30%
Imidazole derivates	0	0	0	0	0	0.01	0.005	0.01	100%
Aminocoumarins	0.03	0.03	0.02	0.02	0.02	0.02	0	0	-100%
Total	62.3	56.5	39.0	32.1	29.0	30.4	30.2	28.3	-55%
HPCIAs	2014	2015	2016	2017	2018	2019	2020	2021	
Fluoroquinolones	0.35	0.35	0.23	0.16	0.15	0.13	0.10	0.10	-73%
3rd and 4th generation cephalosporins	0.19	0.17	0.14	0.11	0.06	0.03	0.04	0.02	-90%
Colistin	0.12	0.13	0.02	0.001	0.0007	0.0002	0.00007	0	-100%
Total HP-CIA	0.7	0.6	0.4	0.3	0.2	0.2	0.1	0.1	-83%

Table S.1.2: Active ingredient in mg/kg of antibiotics sold for food-producing animals by route of administration from 2014 to 2021.

Please note, the oral/water category includes oral powders, oral pastes, oral solutions, and bolus preparations, and the administration route classed as “other” includes intramammary dry and lactating cow, and intrauterine preparations.

Administration route	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
In-feed	38.6	33.4	20.6	14.7	12.3	12.7	12.1	9.6	-75%
Oral/water	16.9	15.6	11.7	9.5	9.5	11.1	11.9	11.7	-31%
Injectable	6.4	7.1	6.3	7.5	6.7	6.3	5.9	6.6	4%
Other	0.4	0.5	0.4	0.4	0.5	0.4	0.3	0.3	-25%
Total	62.3	56.5	39.0	32.1	29.0	30.4	30.2	28.3	-55%

S1.2: Sales of intramammary products (in courses per dairy cow)

Table S1.2.1: Sales of a) dry and lactating cow intramammary products in courses per dairy cow from 2014 to 2021 and b) HP-CIA sales of dry and lactating intramammary products in courses per dairy cow from 2014 to 2021.

a) Dry and lactating cow intramammary products

Intramammary product DCDvet	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
Lactating cow tubes	0.89	0.80	0.82	0.69	0.78	0.60	0.51	0.40	-55%
Dry cow tubes	0.62	0.73	0.61	0.54	0.64	0.58	0.48	0.55	-12%

b) HP-CIA sales of dry and lactating intramammary products

Intramammary product DCDvet	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
Combination of lactating and dry cow HP-CIAs	0.37	0.33	0.24	0.17	0.12	0.03	0.07	0.02	-96%

S1.3: Sales of veterinary antibiotics for all animal species (in tonnes)

Table S.3.1: Active ingredient in tonnes and percentage of total sales of antibiotics sold for the animal species categories: a) food-producing animal species only, b) non-food-producing animal species only and c) combination of food- and non-food-producing animal species from 2014 to 2021.

Please note that totals were rounded to the nearest integer. This explains the minor discrepancies between the sum of individual species categories and the totals presented. Also, regarding the food-producing animal species categories, the pigs and poultry only and poultry only categories, include products authorised for use in ducks and gamebirds. Additionally, the multiple food-producing animal species category does not include products indicated for pigs and poultry only, horses or products indicated for a combination of both farmed food- and non-food-producing species, to prevent double counting. It does include products licensed for sheep only. Note that unlike in previous years, this section includes products licensed for the combination of food-producing animals and rabbits for example if a product was licensed for pigs and rabbits, it was put in the pig only section. This is because these products are licensed for farmed rabbits and there are no rabbits being farmed for food in the UK.

Regarding the non-food producing animal species, the companion animal only category includes dogs, cats, reptiles, rodents, ornamental birds, cage birds, pigeons, exotic animals, reptiles, bearded dragons and rabbits. Regarding the horse only category, in the UK, horses are primarily a companion or sport animal, and not raised for food. For this reason, horses have been classified as 'non-food-producing animals' when reporting tonnage of active ingredient. Finally, regarding the total (percentage) for combination of food and non-food producing animal species unlike last year, this excludes products that are licensed for a combination of food-producing animals and rabbits, as these are designed for farmed rabbits and no rabbits are farmed in UK for food.

a) Food-producing animal species only

Animal species	2014	2015	2016	2017	2018	2019	2020	2021
Pigs and poultry only	171.2	156.5	96.9	79.6	79.0	70.8	76.7	68.0
Pigs only	63.8	51.5	41.1	33.8	25.8	29.6	24.6	24.2
Poultry only	42.9	38.1	26.2	15.0	12.9	15.1	14.7	14.3
Cattle only	13.0	14.1	15.2	13.7	13.0	12.0	11.4	11.1
Fish only	2.4	0.7	1.6	3.4	1.6	3.1	5.1	0.5
Multiple food-producing animal species	98.5	95.3	59.6	51.6	49.9	55.4	57.0	53.2
Total (percentage)	391.9 (88)	356.4 (88)	240.8 (82)	197.2 (80)	182.4 (82)	186.3 (82)	189.5 (84)	171.3 (81)

b) Non-food-producing animal species only

Animal species	2014	2015	2016	2017	2018	2019	2020	2021
Companion animal only (excluding horse only)	15.8	12.7	14.7	14.4	13.4	12.5	11.8	13.1
Horse only	16.0	13.4	14.9	6.7	2.4	2.1	2.4	3.0
Total (percentage)	31.8 (7)	26.1 (6)	29.6 (10)	21.1 (9)	15.8 (7)	14.6 (6)	14.2 (6)	16.1 (8)

c) Combination of food- and non-food-producing animal species

Animal species	2014	2015	2016	2017	2018	2019	2020	2021
Indicated for combination of food- and non- food-producing animal species	22.9 (5)	23.6 (6)	22.9 (8)	27.2 (11)	24.7 (11)	27.6 (12)	23.0 (10)	25.1 (12)

Table S1.3.2: Active ingredient in tonnes by antibiotic class and route of administration; 2021

Please note, the totals were rounded to the nearest integer. This explains any minor discrepancy between the overall total and the classes' totals. Additionally, the oral/water category includes oral pastes, oral solutions and bolus preparations, the administration route classed as "other" includes intramammary and intrauterine preparations.

Antibiotic Class	In-feed	Oral/water	Injectable	Tablets	Other
Tetracyclines	33.3	21.3	13.0	0.5	0.1
Penicillins	8.8	27.8	15.7	7.0	1.3
Trimethoprim/sulphonamides	11.1	7.9	2.8	0	0
Aminoglycosides	0.9	12.2	8.1	0	0.3
Macrolides	11.3	4.6	2.9	0.1	0.0
Pleuromutilins	2.0	4.2	0.1	0	0
Lincosamides	0.1	3.3	0.4	0.5	0.01
Amphenicols	0.6	0.8	2.9	0	0
1st and 2nd generation cephalosporins	0	0	0.3	3.0	0.6
Imidazole derivatives	0.0	0.04	0.0	1.7	0.0
Fluoroquinolones	0	0.3	0.3	0.1	0
3rd and 4th generation cephalosporins	0	0	0.1	0	0.01
Total	68.1	82.5	46.6	12.9	2.3

Table S1.3.3: Active ingredient in kg of HP-CIAs sold for all animal species from 2014 to 2021

Please note, for colistin sales in 2017, 2018, and 2019 one colistin product, which accounts for 2.9 kg, 17.6 kg and 8.8 kg active ingredient for 2017, 2018 and 2019 respectively was excluded as the MAH identified that this was exported as medicated feed and therefore not used in the UK.

Antibiotic Class	2014	2015	2016	2017	2018	2019	2020	2021
3rd and 4th generation cephalosporins	1336.1	1202.9	1002.6	780.0	467.5	227.5	270.8	142.0
Fluoroquinolones	2586.7	2526.6	1724.6	1220.9	1156.1	1037.2	811.4	750.8
Colistin	854.2	877.7	130.3	4.3	5.0	1.2	0.5	0
Total sales of HP-CIAs	4777.0	4617.2	2857.5	2005.2	1628.7	1266.0	1082.7	892.8

S2.1: Usage of veterinary antibiotics for pigs (in mg/kg)**Table S2.1.1:** Usage recorded for active ingredient in mg/kg of antibiotics in eMB Pigs by antibiotic class; 2015 to 2021

Please note that the antibiotic class referred to as “other” includes lincosamides, amphenicols, polymyxins, fluoroquinolones and third and fourth generation cephalosporins.

Antibiotic	2015	2016	2017	2018	2019	2020	2021	Change 2015 to 2021
Tetracyclines	117.7	82.4	55.7	46.1	42.1	37.7	30.5	-74%
Penicillins	37.0	27.4	22.4	21.2	20.2	21.9	17.7	-52%
Trimethoprim-sulphonamides	66.2	29.2	20.8	18.3	17.9	16.5	14.0	-79%
Macrolides	31.0	28.8	16.0	10.5	9.1	11.2	9.9	-68%
Aminoglycosides	3.5	3.0	3.6	5.5	6.5	8.3	8.6	143%
Pleuromutilins	17.3	7.6	9.8	5.3	10.5	5.1	3.3	-81%
Other	5.1	4.3	2.5	3.2	4.0	4.4	3.2	-37%
Total	277.7	182.7	130.7	110.1	110.5	105.0	87.3	-69%

Table S2.1.2: HP-CIA usage, depicted in active ingredient of antibiotics, in mg/kg recorded in eMB Pigs from 2015 to 2021

Antibiotic	2015	2016	2017	2018	2019	2020	2021	Change 2015 to 2021
Fluoroquinolones	0.106	0.047	0.074	0.051	0.034	0.045	0.026	-75%
Third and fourth generation cephalosporins	0.018	0.008	0.014	0.010	0.005	0.007	0.007	-62%
Colistin	0.855	0.210	0.010	0.013	0.002	0	0	-100%
Total	0.979	0.266	0.097	0.074	0.042	0.052	0.033	-97%

S2.2: Usage of veterinary antibiotics for meat poultry (in tonnes and mg/kg)

Table S2.2.1: Active ingredient in tonnes of antibiotics used by all members of BPC Antibiotic Stewardship by antibiotic class from 2014 to 2021

Please note, the category penicillins includes amoxicillin and phenoxymethylpenicillin and antibiotics in the class referred to as “other” includes aminoglycosides, pleuromutilins, fluoroquinolones, colistin and products under the cascade. Also, both fluoroquinolones and colistin are HP-CIAs.

Antibiotic	2014	2015	2016	2017	2018	2019	2020	2021	Change 2014 to 2021
Penicillins	19.8	14.1	10.6	8.2	10.2	12.7	15.0	12.2	-38%
Tetracyclines	30.6	23.9	9.0	3.3	2.5	3.9	2.5	1.6	-95%
Lincomycins	7.1	4.8	1.4	1.2	1.7	1.5	2.2	2.5	-65%
Potentiated sulphonamides	1.2	1.0	1.6	0.9	1.2	1.1	1.0	0.9	-25%
Macrolides	2.7	1.1	0.5	0.6	0.5	0.06	0.1	0.01	-99%
Other, including:	2.1	1.4	0.6	0.2	0.1	0.3	0.1	0.01	-95%
Fluoroquinolones (kg)	1,131	540	122	38	17.3	14.4	12.1	56.6	(-1074 kg)
Colistin (kg)	121	40	8	0	0	0	0	0	(-121 kg)
Total	63.4	46.2	23.7	14.4	16.2	19.7	21.0	17.3	-73%

Table S2.2.2: Active ingredient in mg/kg of antibiotics used by all members of BPC Antibiotic Stewardship by species from 2014 to 2021

Species	2014	2015	2016	2017	2018	2019	2020	2021	Change 2014 to 2021
Turkey	219.5	199.8	86.4	45.2	46.7	42.0	25.7	42.6	-81%
Chicken	48.8	27.3	17.1	9.9	12.4	17.4	16.3	13.7	-72%
Duck	15.1	8.3	3.3	3.3	1.7	1.6	2.6	1.7	-89%

S2.3: Usage of veterinary antibiotics for laying hens (in % bird days)

Table S2.3.1: Antibiotic use in percentage bird days by members of the BEIC Lion Code from 2016 to 2021.

Please note, the class referred to as “other” includes fluoroquinolones, colistin (both of which are HP-CIAs), sulphonamides, and lincosamides.

Antibiotic	2016	2017	2018	2019	2020	2021	Change 2016 to 2021
Tetracyclines	0.26	0.31	0.33	0.41	0.26	0.18	-30%
Pleuromutilins	0.25	0.17	0.11	0.12	0.10	0.10	-62%
Macrolides	0.04	0.06	0.04	0.06	0.03	0.02	-45%
Penicillins	0.06	0.02	0.05	0.05	0.05	0.02	-67%
Aminoglycosides	0.02	0.01	0.02	0.04	0.03	0.01	-42%
Other:	0.03	0	0.0002	0.003	0.002	0.001	-98%
Fluoroquinolones	0.002	0	0	0	0	0	
Colistin	0.03	0	0	0	0	0	
Total	0.67	0.57	0.55	0.68	0.47	0.33	-50%

S2.4: Usage of veterinary antibiotics for gamebirds (in tonnes)

Table S2.4.1: Active ingredient in tonnes of antibiotics used by the gamebird industry, recorded by GFA from 2016 to 2021

Please note the class referred to as “other” includes aminoglycosides, amphenicols, colistin, fluoroquinolones, lincomycins, macrolides, trimethoprim/sulphonamides. Also, both fluoroquinolones and colistin are HP-CIAs.

Antibiotic	2016	2017	2018	2019	2020	2021	Change 2016 to 2021
Tetracyclines	14.4	8.2	5.5	5.5	2.9	4.5	-69%
Pleuromutilins	3.7	3.6	2.8	2.7	1.5	2.4	-30%
Penicillins	1.2	0.8	1.1	1.5	0.8	1.5	30%
Other:	1.0	0.4	0.5	0.8	0.5	0.6	-41%
Fluoroquinolones (kg)	63	50	47	58	22	26	-58%
Colistin (kg)	0.6	0	0	0	0	0	-100%
Total	20.0	12.6	9.2	10.0	5.7	8.9	-55%

S2.5: Usage of veterinary antibiotics for Salmon (mg/kg)

Table S2.5.1: Active ingredient in mg/kg of antibiotics used on Scottish salmon farms from 2017 to 2021

Antibiotic	2017	2018	2019	2020	2021	Change 2017 to 2021
Oxytetracycline	13.8	3.9	10.2	25.3	37.2	170%
Florfenicol	2.2	2.7	3.3	4.0	5.9	170%
Oxolinic acid	0.1	0.1	0.02	0.01	0	-100%
Amoxicillin	0.004	0.0	0.0	0.0	0	-100%
Total	16.1	6.7	13.5	29.3	43.1	168%

S2.6: Usage of veterinary antibiotics for trout (mg/kg)

Table S2.6.1: Active ingredient in mg/kg of antibiotics used on a sample of trout farms from 2017 to 2021

Antibiotic	2017	2018	2019	2020	2021	Change 2017 to 2021
Oxytetracycline	7.3	3.8	5.1	7.7	2.9	-61%
Oxolinic acid	6.6	5.8	2.4	4.3	2.1	-68%
Florfenicol	4.4	2.2	1.9	1.9	1.0	-73%
Amoxicillin	0.9	1.2	0.2	0	0	-100%
Total	19.2	13.0	9.7	13.9	5.9	-69%

S2.7: Sales of veterinary antibiotics for cattle (mg/kg)

Table S2.7.1: Active ingredient in mg/kg of sales of injectable HP-CIA products licenced for cattle, 2014 to 2021

Antibiotic	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
Injectable HP-CIA products licenced for cattle (mg/kg)	1.10	1.08	0.92	0.70	0.50	0.26	0.29	0.24	-78%

S2.8: Sales of veterinary antibiotics for dogs and cats (in DDDVet/kg)

Table S2.8.1: Active ingredient (DDDVet/kg) of antibiotics by antibiotic class sold for use in a) dogs from 2014 to 2021 b) cats from 2014 to 2021.

Please note, antibiotic classes listed as “other” include other aminopenicillins (amoxicillin and ampicillin), trimethoprim-sulphonamides, metronidazole-spiramycin. Some antibiotic classes have been rounded to two decimals places for ease of comparison.

a) Active ingredient by antibiotic class sold for use in dogs

Antibiotic Class	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
Amoxicillin-clavulanic acid (aminopenicillin)	2.2	1.3	1.6	1.8	1.7	1.5	1.3	1.7	-21%
Cephalexin (1st and 2nd generation cephalosporin)	1.0	0.8	0.8	0.7	0.7	0.6	0.5	0.6	-44%
Clindamycin (lincosamide)	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-34%
Fluoroquinolones	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	-45%
Metronidazole (imidazole derivative)	0	0	0.1	0.2	0.2	0.2	0.2	0.1	100%
Tetracyclines	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-33%
Cefovecin (3rd and 4th generation cephalosporin)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-29%
Other*	0.32	0.28	0.39	0.14	0.10	0.07	0.03	0.03	-89%
Total	4.4	3.1	3.5	3.5	3.4	2.9	2.6	3.1	-31%

b) Active ingredient by antibiotic class sold for use in cats

Antibiotic Class	2014	2015	2016	2017	2018	2019	2020	2021	Change since 2014
Cefovecin (3 rd and 4 th generation cephalosporin)	1.3	0.7	1.2	1.2	1.1	1.1	1.0	1.0	-24%
Amoxicillin-clavulanic acid (aminopenicillin)	0.9	0.7	0.6	0.7	0.6	0.6	0.8	1.0	12%
Metronidazole (imidazole derivative)	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	100%
Tetracyclines	0.05	0.04	0.05	0.05	0.04	0.04	0.06	0.11	119%
Clindamycin (lincosamide)	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	29%
fluoroquinolones	0.07	0.06	0.06	0.06	0.12	0.05	0.05	0.04	-34%
Cephalexin (1 st and 2 nd generation cephalosporin)	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.02	-30%
Other	0.07	0.06	0.03	0.04	0.03	0.02	0.02	0.02	-75%
Total	2.5	1.7	2.1	2.2	2.1	2.0	2.1	2.4	-1%