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Defined daily doses for animals (DDDvet) and defined course doses for animals (DCDvet)

European Surveillance of Veterinary Antimicrobial Consumption (ESVAC)

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Introduction

The defined daily dose for animals (DDDvet) and the defined course dose for animals (DCDvet) for antimicrobial agents for use in cattle, pigs and broilers (poultry¹) have been assigned according to the principles laid out in the "Principles on assignment of defined daily dose for animals (DDDvet) and defined course dose for animals (DCDvet) ([EMA/710019/2014](#))". Assignment of DDDvet and DCDvet is generally based on SPC information on dosing collected from nine European Union Member States.

The main aim of the DDDvet and DCDvet system is to provide standardised units of measurement for the reporting of data on antimicrobial consumption by species; these units take into account differences in dosing between species and substances. The terms DDDvet and DCDvet should preferably be reserved for the ESVAC units in order to avoid confusion with similar units developed by projects other than ESVAC. In order to facilitate comparison between countries, the DDDvet and DCDvet values should ideally also be used to report data at national level.

DDDvet and DCDvet are technical units of measurement solely intended for the reporting of antimicrobial consumption data. They should not be assumed to reflect the daily and course doses recommended or prescribed, and are not applicable for commercial use such as pricing and analyses of costs for veterinary medicinal products. The assigned DDDvet and DCDvet values are often a compromise.

Note that DDDvet and DCDvet values for long acting injectable veterinary medicinal products containing gamithromycin, tildipirosin or tulathromycin will be published at a later date.

For questions please send an e-mail to: esvac@ema.europa.eu.

Explanations for exceptions to the principles

Note that exceptions to the principles for assignment of DDDvet and DCDvet are explained and highlighted in the comments field in the lists. An underscore (_) in the substance indicates that the assigned DDDvet and DCDvet are subject to an exception. In some cases, further details on those exceptions are provided in the document on the principles ([EMA/710019/2014](#)).

Exception for DCDvet for premixes for pigs

Generally, the same DDDvet and DCDvet values are assigned to all oral forms containing a particular active substance and intended for a particular species. However, because in general the duration of treatment for premixes for pigs is considerably longer than that for other oral forms for pigs, a separate DCDvet is assigned to premixes for pigs. Therefore, the list with DDDvet and DCDvet values for pigs shows the oral administration routes 'Oral except premix' and 'Premix'.

The practical use of the list should be as follows:

- For premixes apply the values given for the 'Premix' route;
- For oral products other than premix (e.g. tablet/bolus, oral solution and oral powder) apply the values given for the 'Oral except premix' route;
- When no value is given for premix for an active substance (no premixes containing those active substances were identified as currently marketed in the EU), apply the values given for the 'Oral except premix' route.

¹ Data were originally collected for broilers, but values can be used as a proxy for other poultry species.

Exceptions for combination products of lincomycin/spectinomycin and trimethoprim/sulfonamide

Generally, the same DDDvet and DCDvet values are assigned to substances, regardless if they are in a single substance product or a combination product. When the dose of at least one of the active substances differs substantially between single active substance products and combination products, an exception to the general principles is created. This is the case for combination products of lincomycin and spectinomycin; therefore the lists contain more than one DDDvet and DCDvet value per administration route for those active substances. The same exception is made for combination products of trimethoprim (TMP) and a sulfonamide; therefore the lists contain more than one DDDvet and DCDvet value per administration route for the sulfonamides.

The use of the lists in these cases should be as follows:

- For lincomycin/spectinomycin combination products apply the values of the relevant line as identified in the 'substance' section by "Lincomycin_spec" and "Spectinomycin_linc", respectively;
- For trimethoprim/sulfonamide combination products apply the values of the relevant line as identified in the 'substance' section by "Trimethoprim_sulfa" and by sulfonamides ending on "_TMP", respectively.

Exception for long acting injectable products containing ceftiofur

Generally, substances in long acting and conventional injectable products are assigned the same DDDvet and DCDvet value. Because the calculated daily dose (see document on principles ([EMA/710019/2014](#))) in pigs for long acting injectable products containing ceftiofur (ceftiofur as crystalline free acid, micronized form; oil adjuvant) differed substantially from the calculated daily dose for conventional injectable products, separate DDDvet values were assigned to long acting and conventional injectable products containing ceftiofur for use in pigs. Furthermore, because the treatment duration differed substantially between long acting and conventional injectable products for use both in cattle and pigs, separate DCDvet values were assigned to long acting and conventional injectable products containing ceftiofur for use in cattle and pigs.

The use of the lists in these cases should be as follows:

- For conventional (non-long acting) injectable products containing ceftiofur used in pigs and cattle, apply the values given for the substance "Ceftiofur";
- For long acting injectable products containing ceftiofur used in pigs and cattle, apply the values given for the substance "Ceftiofur_LA".

Exception for intramammary products for lactating cows containing pirlimycin

Generally, for intramammary products for lactating cows standard DDDvet and DCDvet values are assigned: 1 UD/teat and 3 UD/teat, respectively. An exception is made for the DCDvet for pirlimycin because the number of treatment days for this substance is substantially higher than for the other intramammary products for lactating cows.

The use of the lists in this case should be as follows:

- For intramammary products for lactating cows containing pirlimycin apply the DDDvet and DCDvet given for substance "Pirlimycin".

Pigs – DDDvet and DCDvet values

Abbreviations used: DCDvet - defined course dose for animals; DDDvet - defined daily dose for animals; EU/EEA - European Union/European Economic Area; mg/kg - milligram active substance per kilogram body weight; VMP - veterinary medicinal product.

An underscore (_) in the substance indicates that the assigned DDDvet and DCDvet are subject to an exception which is explained in the comment.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Amoxicillin	Penicillins with extended spectrum	Oral except premix	17	75	mg/kg	Includes amoxicillin in combination with clavulanic acid.
Amoxicillin	Penicillins with extended spectrum	Premix	17	179	mg/kg	Includes amoxicillin in combination with clavulanic acid.
Amoxicillin	Penicillins with extended spectrum	Parenteral	8.9	27	mg/kg	Includes amoxicillin in combination with clavulanic acid.
Ampicillin	Penicillins with extended spectrum	Oral except premix	30	130	mg/kg	
Ampicillin	Penicillins with extended spectrum	Parenteral	12	41	mg/kg	
Apramycin	Aminoglycosides	Oral except premix	9.0	71	mg/kg	
Apramycin	Aminoglycosides	Premix	9.0	153	mg/kg	
Benzathine benzylpenicillin_combi	Beta-lactamase sensitive penicillins	Parenteral	5.4	11	mg/kg	When in combination products; currently not identified as marketed in single substance VMPs in the EU/EEA countries.
Benzylpenicillin	Beta-lactamase sensitive penicillins	Oral except premix	48	168	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Benzylpenicillin	Beta-lactamase sensitive penicillins	Parenteral	12	48	mg/kg	
Cefalexin	First-generation cephalosporins	Oral except premix	30	630	mg/kg	
Cefquinome	Fourth-generation cephalosporins	Parenteral	1.9	7.1	mg/kg	
Ceftiofur	Third-generation cephalosporins	Parenteral	3.0	9.0	mg/kg	
Ceftiofur_LA	Third-generation cephalosporins	Parenteral	0.8	5.0	mg/kg	Long acting due to formulation (crystalline free acid, micronized; oil adjuvant).
Chlortetracycline	Tetracyclines	Oral except premix	31	183	mg/kg	
Chlortetracycline	Tetracyclines	Premix	31	230	mg/kg	
Colistin	Polymyxins	Oral except premix	5.0	25	mg/kg	
Colistin	Polymyxins	Premix	5.0	47	mg/kg	
Colistin	Polymyxins	Parenteral	2.7	12	mg/kg	
Danofloxacin	Fluoroquinolones	Parenteral	1.2	3.8	mg/kg	
Dihydrostreptomycin	Aminoglycosides	Oral except premix	41	132	mg/kg	
Dihydrostreptomycin	Aminoglycosides	Parenteral	20	70	mg/kg	
Doxycycline	Tetracyclines	Oral except premix	11	50	mg/kg	
Doxycycline	Tetracyclines	Premix	11	83	mg/kg	
Doxycycline	Tetracyclines	Parenteral	5.0	23	mg/kg	
Enrofloxacin	Fluoroquinolones	Oral except premix	2.5	10	mg/kg	
Enrofloxacin	Fluoroquinolones	Parenteral	3.4	11	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Erythromycin_combi	Macrolides	Oral except premix	22	65	mg/kg	When in combination products; currently not identified as marketed in single substance oral VMPs in the EU/EEA countries.
Erythromycin	Macrolides	Parenteral	21	74	mg/kg	
Florfenicol	Amphenicols	Oral except premix	10	50	mg/kg	
Florfenicol	Amphenicols	Premix	10	50	mg/kg	
Florfenicol	Amphenicols	Parenteral	9.5	30	mg/kg	
Flumequine	Other quinolones	Oral except premix	16	65	mg/kg	
Flumequine	Other quinolones	Parenteral	23	90	mg/kg	
Gamithromycin_LA	Macrolides	Parenteral	*	*	mg/kg	Long acting only.
Gentamicin	Aminoglycosides	Oral except premix	1.4	2.9	mg/kg	
Gentamicin	Aminoglycosides	Parenteral	6.1	22	mg/kg	
Kanamycin	Aminoglycosides	Parenteral	28	96	mg/kg	
Lincomycin	Lincosamides	Oral except premix	7.6	70	mg/kg	
Lincomycin_spec	Lincosamides	Oral except premix	2.2	24	mg/kg	When in combination with spectinomycin; because the dose of lincomycin is substantially higher in single substance products than in combination with spectinomycin.
Lincomycin	Lincosamides	Premix	7.6	134	mg/kg	

Substance	Antimicrobial class	Route	DDVet	DCDVet	Unit	Comment
Lincomycin_spec	Lincosamides	Premix	2.2	27	mg/kg	When in combination with spectinomycin; because the dose of lincomycin is substantially higher in single substance products than in combination with spectinomycin.
Lincomycin	Lincosamides	Parenteral	10	54	mg/kg	
Lincomycin_spec	Lincosamides	Parenteral	7.8	37	mg/kg	When in combination with spectinomycin; because the dose of lincomycin is substantially higher in single substance products than in combination with spectinomycin.
Marbofloxacin	Fluoroquinolones	Parenteral	2.0	6.8	mg/kg	
Neomycin	Aminoglycosides	Oral except premix	25	118	mg/kg	
Neomycin	Aminoglycosides	Premix	25	131	mg/kg	
Neomycin_combi	Aminoglycosides	Parenteral	6.7	20	mg/kg	When in combination products; currently not identified as marketed in single substance injectables in the EU/EEA countries.
Oxolinic acid	Other quinolones	Oral except premix	26	99	mg/kg	
Oxolinic acid	Other quinolones	Premix	26	101	mg/kg	
Oxytetracycline	Tetracyclines	Oral except premix	26	92	mg/kg	
Oxytetracycline	Tetracyclines	Premix	26	282	mg/kg	
Oxytetracycline	Tetracyclines	Parenteral	7.5	24	mg/kg	
Paromomycin	Other antibacterials	Oral except premix	26	251	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Paromomycin	Other antibacterials	Premix	26	291	mg/kg	
Paromomycin	Other antibacterials	Parenteral	14	56	mg/kg	
Penethamate hydriodide	Beta-lactamase sensitive penicillins	Parenteral	28	83	mg/kg	
Phenoxymethylpenicillin	Beta-lactamase sensitive penicillins	Premix	10	280	mg/kg	
Procaine benzylpenicillin	Beta-lactamase sensitive penicillins	Parenteral	13	47	mg/kg	
Spectinomycin	Other antibacterials	Oral except premix	33	126	mg/kg	
Spectinomycin_linc	Other antibacterials	Oral except premix	3.4	39	mg/kg	When in combination with lincomycin; because the dose of spectinomycin is substantially higher in single substance products than in combination with lincomycin.
Spectinomycin_linc	Other antibacterials	Premix	3.4	27	mg/kg	When in combination with lincomycin; because the dose of spectinomycin is substantially higher in single substance products than in combination with lincomycin.
Spectinomycin	Other antibacterials	Parenteral	40	120	mg/kg	
Spectinomycin_linc	Other antibacterials	Parenteral	17	84	mg/kg	When in combination with lincomycin; because the dose of spectinomycin is substantially higher in single substance products than in combination with lincomycin.
Spiramycin	Macrolides	Oral except premix	25	111	mg/kg	

Substance	Antimicrobial class	Route	DDVet	DCDVet	Unit	Comment
Spiramycin	Macrolides	Premix	25	278	mg/kg	
Spiramycin	Macrolides	Parenteral	24	42	mg/kg	
Sulfachlorpyridazine_TMP	Sulfonamides	Oral except premix	20	80	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadiazine_TMP	Sulfonamides	Oral except premix	23	118	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadiazine_TMP	Sulfonamides	Premix	23	130	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadiazine_TMP	Sulfonamides	Parenteral	14	42	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimethoxine	Sulfonamides	Oral except premix	48	187	mg/kg	
Sulfadimethoxine_TMP	Sulfonamides	Oral except premix	24	94	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimethoxine	Sulfonamides	Premix	48	500	mg/kg	
Sulfadimethoxine_TMP	Sulfonamides	Premix	24	172	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimethoxine	Sulfonamides	Parenteral	30	90	mg/kg	
Sulfadimethoxine_TMP	Sulfonamides	Parenteral	19	56	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimidine	Sulfonamides	Oral except premix	92	413	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Sulfadimidine_TMP	Sulfonamides	Oral except premix	23	135	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimidine	Sulfonamides	Premix	92	291	mg/kg	
Sulfadimidine	Sulfonamides	Parenteral	101	364	mg/kg	
Sulfadimidine_TMP	Sulfonamides	Parenteral	16	65	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadoxine_TMP	Sulfonamides	Oral except premix	25	100	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadoxine_TMP	Sulfonamides	Parenteral	14	49	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfaguanidine	Sulfonamides	Oral except premix	54	189	mg/kg	
Sulfamerazine_combi	Sulfonamides	Oral except premix	13	75	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPs in the EU.
Sulfamerazine_combi	Sulfonamides	Premix	13	75	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPs in the EU/EEA countries.
Sulfamethoxazole_TMP	Sulfonamides	Oral except premix	20	92	mg/kg	When in combination with trimethoprim; due to synergistic effect.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Sulfamethoxazole_TMP	Sulfonamides	Premix	20	113	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxazole_TMP	Sulfonamides	Parenteral	20	100	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxypyridazine_combi	Sulfonamides	Oral except premix	20	80	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPs in the EU/EEA countries.
Sulfamethoxypyridazine_TMP	Sulfonamides	Oral except premix	23	93	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxypyridazine	Sulfonamides	Parenteral	51	278	mg/kg	
Sulfamonomethoxine_combi	Sulfonamides	Premix	9.4	80	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPs in the EU/EEA countries.
Tetracycline	Tetracyclines	Oral except premix	49	208	mg/kg	
Tetracycline	Tetracyclines	Premix	49	340	mg/kg	
Thiamphenicol	Amphenicols	Oral except premix	35	140	mg/kg	
Thiamphenicol	Amphenicols	Parenteral	75	300	mg/kg	
Tiamulin	Pleuromutilins	Oral except premix	9.7	68	mg/kg	
Tiamulin	Pleuromutilins	Premix	9.7	81	mg/kg	
Tiamulin	Pleuromutilins	Parenteral	12	22	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Tildipirosin_LA	Macrolides	Parenteral	*	*	mg/kg	Long acting only.
Tilmicosin	Macrolides	Oral except premix	15	144	mg/kg	
Tilmicosin	Macrolides	Premix	15	225	mg/kg	
Trimethoprim_sulfa	Trimethoprim and derivatives	Oral except premix	4.7	22	mg/kg	When in combination with a sulfonamide; due to synergistic effect.
Trimethoprim_sulfa	Trimethoprim and derivatives	Premix	4.7	28	mg/kg	When in combination with a sulfonamide; due to synergistic effect.
Trimethoprim_sulfa	Trimethoprim and derivatives	Parenteral	3.0	11	mg/kg	When in combination with a sulfonamide; due to synergistic effect.
Tulathromycin_LA	Macrolides	Parenteral	*	*	mg/kg	Long acting only.
Tylosin	Macrolides	Oral except premix	12	129	mg/kg	
Tylosin	Macrolides	Premix	12	98	mg/kg	
Tylosin	Macrolides	Parenteral	13	52	mg/kg	
Tylvalosin	Macrolides	Oral except premix	3.6	26	mg/kg	
Tylvalosin	Macrolides	Premix	3.6	27	mg/kg	
Valnemulin	Pleuromutilins	Oral except premix	5.3	131	mg/kg	
Valnemulin	Pleuromutilins	Premix	5.3	83	mg/kg	

* Note that DDDvet and DCDvet for these long-acting macrolide injectable products will be published at a later date.

Cattle – DDDvet and DCDvet values

Abbreviations used: DCDvet - defined course dose for animals; DDDvet - defined daily dose for animals; EU/EEA - European Union/European Economic Area; mg/kg - milligram active substance per kilogram body weight; VMP - veterinary medicinal product.

An underscore (_) in the substance indicates that the assigned DDDvet and DCDvet are subject to an exception which is explained in the comment.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Amoxicillin	Penicillins with extended spectrum	Oral	20	81	mg/kg	Includes amoxicillin in combination with clavulanic acid.
Amoxicillin	Penicillins with extended spectrum	Parenteral	8.3	29	mg/kg	Includes amoxicillin in combination with clavulanic acid.
Ampicillin	Penicillins with extended spectrum	Oral	29	123	mg/kg	
Ampicillin	Penicillins with extended spectrum	Parenteral	11	37	mg/kg	
Apramycin	Aminoglycosides	Oral	30	150	mg/kg	
Apramycin	Aminoglycosides	Parenteral	20	100	mg/kg	
Benzathine benzylpenicillin_combi	Beta-lactamase sensitive penicillins	Parenteral	2.9	8.6	mg/kg	When in combination products; currently not identified as marketed in single substance injectables in the EU/EEA countries.
Benzylpenicillin	Beta-lactamase sensitive penicillins	Parenteral	14	54	mg/kg	
Cefalexin	First-generation cephalosporins	Parenteral	7.0	32	mg/kg	
Cefquinome	Fourth-generation cephalosporins	Parenteral	1.5	5.5	mg/kg	
Ceftiofur	Third-generation cephalosporins	Parenteral	1.0	4.0	mg/kg	
Ceftiofur_LA	Third-generation cephalosporins	Parenteral	1.0	6.6	mg/kg	Long acting due to formulation (crystalline free acid, micronized; oil adjuvant).
Chlortetracycline	Tetracyclines	Oral	22	138	mg/kg	
Colistin	Polymyxins	Oral	4.8	24	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Colistin	Polymyxins	Parenteral	2.6	12	mg/kg	
Danofloxacin	Fluoroquinolones	Parenteral	1.9	5.1	mg/kg	
Difloxacin	Fluoroquinolones	Parenteral	3.8	15	mg/kg	
Dihydrostreptomycin	Aminoglycosides	Oral	48	138	mg/kg	
Dihydrostreptomycin	Aminoglycosides	Parenteral	25	56	mg/kg	
Doxycycline	Tetracyclines	Oral	10	42	mg/kg	
Doxycycline	Tetracyclines	Parenteral	10	40	mg/kg	
Enrofloxacin	Fluoroquinolones	Oral	4.7	22	mg/kg	
Enrofloxacin	Fluoroquinolones	Parenteral	4.2	16	mg/kg	
Erythromycin	Macrolides	Oral	20	60	mg/kg	
Erythromycin	Macrolides	Parenteral	12	41	mg/kg	
Florfenicol	Amphenicols	Parenteral	13	40	mg/kg	
Flumequine	Other quinolones	Oral	14	66	mg/kg	
Flumequine	Other quinolones	Parenteral	9.8	39	mg/kg	
Framycetin	Aminoglycosides	Parenteral	5.0	10	mg/kg	
Gamithromycin_LA	Macrolides	Parenteral	*	*	mg/kg	Long acting only.
Gentamicin	Aminoglycosides	Oral	7.0	20	mg/kg	
Gentamicin	Aminoglycosides	Parenteral	8.4	27	mg/kg	
Kanamycin	Aminoglycosides	Parenteral	15	53	mg/kg	
Lincomycin_spec	Lincosamides	Parenteral	13	62	mg/kg	When in combination with spectinomycin; currently not identified as marketed in single substance injectables in the EU/EEA countries.
Marbofloxacin	Fluoroquinolones	Oral	1.0	3.0	mg/kg	
Marbofloxacin	Fluoroquinolones	Parenteral	3.6	8.9	mg/kg	
Neomycin	Aminoglycosides	Oral	21	85	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Neomycin_combi	Aminoglycosides	Parenteral	7.4	29	mg/kg	When in combination products; currently not identified as marketed in single substance injectables in the EU/EEA countries.
Oxolinic acid	Other quinolones	Oral	17	80	mg/kg	
Oxytetracycline	Tetracyclines	Oral	20	111	mg/kg	
Oxytetracycline	Tetracyclines	Parenteral	6.5	23	mg/kg	
Paromomycin	Other antibacterials	Oral	38	150	mg/kg	
Paromomycin	Other antibacterials	Parenteral	12	49	mg/kg	
Penethamate hydriodide	Beta-lactamase sensitive penicillins	Parenteral	12	38	mg/kg	
Phthalylsulfathiazole_combi	Sulfonamides	Oral	25	113	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPs in the EU/EEA countries.
Procaine benzylpenicillin	Beta-lactamase sensitive penicillins	Parenteral	13	46	mg/kg	
Spectinomycin	Other antibacterials	Oral	20	70	mg/kg	
Spectinomycin	Other antibacterials	Parenteral	28	85	mg/kg	
Spectinomycin_linc	Other antibacterials	Parenteral	18	83	mg/kg	When in combination with lincomycin; because the dose of spectinomycin is substantially higher in single substance products than in combination with lincomycin.
Spiramycin	Macrolides	Oral	35	140	mg/kg	
Spiramycin	Macrolides	Parenteral	21	38	mg/kg	
Streptomycin	Aminoglycosides	Oral	70	245	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Streptomycin	Aminoglycosides	Parenteral	10	20	mg/kg	
Sulfachlorpyridazine_TMP	Sulfonamides	Oral	20	80	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadiazine_TMP	Sulfonamides	Oral	24	114	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadiazine_TMP	Sulfonamides	Parenteral	13	36	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimethoxine	Sulfonamides	Oral	40	185	mg/kg	
Sulfadimethoxine_TMP	Sulfonamides	Oral	23	113	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimethoxine	Sulfonamides	Parenteral	30	90	mg/kg	
Sulfadimethoxine_TMP	Sulfonamides	Parenteral	19	56	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimidine	Sulfonamides	Oral	105	445	mg/kg	
Sulfadimidine_TMP	Sulfonamides	Oral	30	180	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimidine	Sulfonamides	Parenteral	101	364	mg/kg	
Sulfadimidine_TMP	Sulfonamides	Parenteral	16	65	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadoxine_TMP	Sulfonamides	Oral	25	100	mg/kg	When in combination with trimethoprim; due to synergistic effect.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Sulfadoxine_TMP	Sulfonamides	Parenteral	14	51	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfaguanidine	Sulfonamides	Oral	77	270	mg/kg	
Sulfamethoxazole_TMP	Sulfonamides	Parenteral	15	75	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxypyridazine_combi	Sulfonamides	Oral	35	115	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPS in the EU/EEA countries.
Sulfamethoxypyridazine_TMP	Sulfonamides	Oral	23	93	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxypyridazine	Sulfonamides	Parenteral	51	278	mg/kg	
Tetracycline	Tetracyclines	Oral	28	130	mg/kg	
Tetracycline	Tetracyclines	Parenteral	2.5	5.0	mg/kg	
Thiamphenicol	Amphenicols	Oral	45	180	mg/kg	
Tildipirosin_LA	Macrolides	Parenteral	*	*	mg/kg	Long acting only.
Tilmicosin	Macrolides	Oral	21	85	mg/kg	
Tilmicosin	Macrolides	Parenteral	4.0	9.8	mg/kg	
Trimethoprim_sulfa	Trimethoprim and derivatives	Oral	4.8	23	mg/kg	When in combination with a sulfonamide; due to synergistic effect.
Trimethoprim_sulfa	Trimethoprim and derivatives	Parenteral	2.8	10	mg/kg	When in combination with a sulfonamide; due to synergistic effect.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Tulathromycin_LA	Macrolides	Parenteral	0.3	2.5	mg/kg	Long acting only.
Tylosin	Macrolides	Oral	41	414	mg/kg	
Tylosin	Macrolides	Parenteral	13	59	mg/kg	

* Note that DDDvet and DCDvet for these long-acting macrolide injectable products will be published at a later stage.

Broilers (poultry) – DDDvet and DCDvet values

Abbreviations used: DCDvet - defined course dose for animals; DDDvet - defined daily dose for animals; EU/EEA - European Union/European Economic Area; mg/kg - milligram active substance per kilogram body weight; VMP - veterinary medicinal product.

An underscore (_) in the substance indicates that the assigned DDDvet and DCDvet are subject to an exception which is explained in the comment.

Note: data were originally collected for broilers, but values can be used as a proxy for other poultry species.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Amoxicillin	Penicillins with extended spectrum	Oral	16	74	mg/kg	
Ampicillin	Penicillins with extended spectrum	Oral	108	453	mg/kg	
Apramycin	Aminoglycosides	Oral	81	388	mg/kg	
Chlortetracycline	Tetracyclines	Oral	30	196	mg/kg	
Colistin	Polymyxins	Oral	5.1	27	mg/kg	
Difloxacin	Fluoroquinolones	Oral	10	48	mg/kg	
Doxycycline	Tetracyclines	Oral	15	61	mg/kg	
Enrofloxacin	Fluoroquinolones	Oral	10	41	mg/kg	
Erythromycin	Macrolides	Oral	20	82	mg/kg	
Florfenicol	Amphenicols	Oral	30	120	mg/kg	
Flumequine	Other quinolones	Oral	14	60	mg/kg	
Lincomycin	Lincosamides	Oral	8.6	69	mg/kg	
Lincomycin_spec	Lincosamides	Oral	22	112	mg/kg	When in combination with spectinomycin; because the dose of lincomycin is substantially lower in single substance products than in combination with spectinomycin.
Neomycin	Aminoglycosides	Oral	24	114	mg/kg	
Oxolinic acid	Other quinolones	Oral	20	93	mg/kg	
Oxytetracycline	Tetracyclines	Oral	39	207	mg/kg	

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Paromomycin	Other antibacterials	Oral	23	90	mg/kg	
Phenoxymethylpenicillin	Beta-lactamase sensitive penicillins	Oral	17	84	mg/kg	
Spectinomycin	Other antibacterials	Oral	124	433	mg/kg	
Spectinomycin_linc	Other antibacterials	Oral	38	193	mg/kg	When in combination with lincomycin; because the dose of spectinomycin is substantially higher in single substance products than in combination with lincomycin.
Spiramycin	Macrolides	Oral	73	459	mg/kg	
Sulfachlorpyridazine_TMP	Sulfonamides	Oral	30	120	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfaclozine	Sulfonamides	Oral	70	298	mg/kg	
Sulfadiazine_TMP	Sulfonamides	Oral	34	219	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimethoxine	Sulfonamides	Oral	65	369	mg/kg	
Sulfadimethoxine_TMP	Sulfonamides	Oral	31	161	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfadimidine	Sulfonamides	Oral	182	675	mg/kg	
Sulfadimidine_TMP	Sulfonamides	Oral	25	150	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxazole_TMP	Sulfonamides	Oral	27	98	mg/kg	When in combination with trimethoprim; due to synergistic effect.
Sulfamethoxyipyridazine_TMP	Sulfonamides	Oral	23	93	mg/kg	When in combination with trimethoprim; due to synergistic effect.

Substance	Antimicrobial class	Route	DDDvet	DCDvet	Unit	Comment
Sulfamonomethoxine_combi	Sulfonamides	Oral	9.5	81	mg/kg	When in combination products not including trimethoprim; currently not identified as marketed in single substance oral VMPs in the EU/EEA countries.
Sulfaquinoxaline	Sulfonamides	Oral	60	280	mg/kg	
Tetracycline	Tetracyclines	Oral	71	353	mg/kg	
Thiamphenicol	Amphenicols	Oral	55	232	mg/kg	
Tiamulin	Pleuromutilins	Oral	23	88	mg/kg	
Tilmicosin	Macrolides	Oral	18	53	mg/kg	
Trimethoprim_sulfa	Trimethoprim and derivatives	Oral	6.4	35	mg/kg	When in combination with a sulfonamide; due to synergistic effect.
Tylosin	Macrolides	Oral	81	342	mg/kg	
Tylvalosin	Macrolides	Oral	25	75	mg/kg	

Intramammary products for lactating cows – DDDvet and DCDvet values

Abbreviations used: ATCvet - anatomical therapeutic chemical classification system for veterinary medicinal products; DCDvet - defined course dose for animals; DDDvet - defined daily dose for animals; UD/teat - unit dose per teat.

The combinations of substances in intramammary products for lactating cows given in the table below are identified from the ESVAC sales database, as declared by 26 EU/EEA Member States.

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DDDvet	DCDvet	Unit	Comments
QJ51CR50	Amoxicillin	Cloxacillin			1	3	UD/teat	
QJ51CR02	Amoxicillin				1	3	UD/teat	Amoxicillin in combination with clavulanic acid.
QJ51RD01	Ampicillin	Cefalexin			1	3	UD/teat	
QJ51CR50	Ampicillin	Cloxacillin			1	3	UD/teat	
QJ51RC20	Ampicillin	Dicloxacillin	Gentamicin		1	3	UD/teat	
QJ51CR50	Ampicillin	Dicloxacillin			1	3	UD/teat	
QJ51CR50	Ampicillin	Oxacillin			1	3	UD/teat	
QJ51CA01	Ampicillin				1	3	UD/teat	
QJ51RG01	Bacitracin	Neomycin	Tetracycline		1	3	UD/teat	
QJ51RC22	Benzylpenicillin	Dihydrostreptomycin	Nafcillin		1	3	UD/teat	
QJ51RC22	Benzylpenicillin	Dihydrostreptomycin			1	3	UD/teat	
QJ51RC22	Benzylpenicillin	Procaine benzylpenicillin	Streptomycin		1	3	UD/teat	
QJ51RC22	Benzylpenicillin	Streptomycin			1	3	UD/teat	
QJ51CE01	Benzylpenicillin				1	3	UD/teat	
QJ51RD34	Cefacetrile	Rifaximin			1	3	UD/teat	
QJ51DB10	Cefacetrile				1	3	UD/teat	
QJ51RD01	Cefalexin	Dihydrostreptomycin			1	3	UD/teat	
QJ51RD01	Cefalexin	Gentamicin			1	3	UD/teat	

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DDDvet	DCDvet	Unit	Comments
QJ51RD01	Cefalexin	Kanamycin			1	3	UD/teat	
QJ51DB01	Cefalexin				1	3	UD/teat	
QJ51DB90	Cefalonium				1	3	UD/teat	
QJ51DB08	Cefapirin				1	3	UD/teat	
QJ51DB04	Cefazolin				1	3	UD/teat	
QJ51DD12	Cefoperazone				1	3	UD/teat	
QJ51DE90	Cefquinome				1	3	UD/teat	
QJ51DD90	Ceftiofur				1	3	UD/teat	
QJ51RG01	Chlortetracycline	Neomycin	Bacitracin		1	3	UD/teat	
QJ51RC26	Cloxacillin	Colistin			1	3	UD/teat	
QJ51RC26	Cloxacillin	Gentamicin			1	3	UD/teat	
QJ51RC26	Cloxacillin	Neomycin			1	3	UD/teat	
QJ51RC26	Cloxacillin	Sulfadimidine	Trimethoprim		1	3	UD/teat	
QJ51CF02	Cloxacillin				1	3	UD/teat	
QJ51FA01	Erythromycin				1	3	UD/teat	
QJ51RC23	Framycetin	Procaine benzylpenicillin			1	3	UD/teat	
QJ01GB03	Gentamicin				1	3	UD/teat	
QJ51RF03	Lincomycin	Neomycin			1	3	UD/teat	
QJ01FF02	Lincomycin				1	3	UD/teat	
QJ51RC22	Neomycin	Benzylpenicillin	Oxytetracycline		1	3	UD/teat	
QJ51RC23	Neomycin	Penethamate hydriodide	Procaine benzylpenicillin		1	3	UD/teat	
QJ51RC23	Neomycin	Procaine benzylpenicillin	Dihydrostreptomycin		1	3	UD/teat	
QJ51RC23	Neomycin	Procaine benzylpenicillin	Oxytetracycline		1	3	UD/teat	
QJ51RG01	Neomycin	Tylosin			1	3	UD/teat	

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DDDvet	DCDvet	Unit	Comments
QJ51RC23	Novobiocin	Neomycin	Procaine benzylpenicillin	Streptomycin	1	3	UD/teat	
QJ51RC23	Novobiocin	Procaine benzylpenicillin			1	3	UD/teat	
QJ51CF04	Oxacillin				1	3	UD/teat	
QJ51RG01	Penethamate hydriodide	Dihydrostreptomycin	Framycetin		1	3	UD/teat	
QJ51FF90	Pirlimycin				1	8	UD/teat	Due to high number of treatment days.
QJ51RC22	Procaine benzylpenicillin	Benzylpenicillin	Dihydrostreptomycin		1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Dihydrostreptomycin	Novobiocin		1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Dihydrostreptomycin			1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Nafcillin	Dihydrostreptomycin		1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Neomycin	Dihydrostreptomycin	Novobiocin	1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Neomycin	Streptomycin		1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Neomycin			1	3	UD/teat	
QJ51RC23	Procaine benzylpenicillin	Streptomycin			1	3	UD/teat	
QJ51CE09	Procaine benzylpenicillin				1	3	UD/teat	

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DDDvet	DCDvet	Unit	Comments
QJ51XX01	Rifaximin				1	3	UD/teat	
QJ51RF01	Spiramycin	Neomycin			1	3	UD/teat	
QJ51RE01	Sulfadiazine	Trimethoprim			1	3	UD/teat	
QJ51BA02	Thiamphenicol				1	3	UD/teat	
QJ51EA01	Trimethoprim				1	3	UD/teat	

Intramammary products for dry cows – DCDvet values

Abbreviations used: ATCvet - anatomical therapeutic chemical classification system for veterinary medicinal products; DCDvet - defined course dose for animals; UD/udder - unit dose per udder.

The combinations of substances in intramammary products for dry cows given in the table below are identified from the ESVAC sales database, as declared by 26 EU/EEA Member States.

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DCDvet	Unit	Comments
QJ51CR02	Amoxicillin				4	UD/udder	Amoxicillin in combination with clavulanic acid.
QJ51CR50	Ampicillin	Cloxacillin			4	UD/udder	
QJ51RC25	Benethamine benzylpenicillin	Framycetin	Penethamate hydriodide		4	UD/udder	
QJ51RC24	Benzathine benzylpenicillin	Dihydrostreptomycin			4	UD/udder	
QJ51RC22	Benzylpenicillin	Dihydrostreptomycin	Nafcillin		4	UD/udder	
QJ51RC22	Benzylpenicillin	Framycetin			4	UD/udder	
QJ51RC22	Benzylpenicillin	Neomycin	Bacitracin		4	UD/udder	
QJ51RC22	Benzylpenicillin	Neomycin			4	UD/udder	
QJ51RC22	Benzylpenicillin	Procaine benzylpenicillin	Neomycin		4	UD/udder	
QJ01RC22	Benzylpenicillin	Streptomycin			4	UD/udder	
QJ51RD01	Cefalexin	Dihydrostreptomycin			4	UD/udder	
QJ51DB01	Cefalexin				4	UD/udder	
QJ51DB01	Cefalexin benzathine	Cefalexin			4	UD/udder	
QJ51DB01	Cefalexin benzathine				4	UD/udder	
QJ51DB90	Cefalonium				4	UD/udder	

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DCDvet	Unit	Comments
QJ51DB08	Cefapirin				4	UD/udder	
QJ51DB08	Cefapirin benzathine				4	UD/udder	
QJ51DB04	Cefazolin				4	UD/udder	
QJ51DE90	Cefquinome				4	UD/udder	
QJ51CF02	Cloxacillin				4	UD/udder	
QJ51CR50	Cloxacillin benzathine	Amoxicillin			4	UD/udder	
QJ51CR50	Cloxacillin benzathine	Ampicillin			4	UD/udder	
QJ51CF02	Cloxacillin benzathine				4	UD/udder	
QJ51RC23	Dihydrostreptomycin	Procaine benzylpenicillin	Nafcillin		4	UD/udder	
QJ51RC22	Dihydrostreptomycin	Procaine benzylpenicillin			4	UD/udder	
QJ51RF02	Erythromycin	Neomycin			4	UD/udder	
QJ51RD01	Kanamycin	Cefalexin			4	UD/udder	
QJ51RG01	Neomycin	Cloxacillin benzathine			4	UD/udder	
QJ51RG01	Neomycin	Lincomycin			4	UD/udder	
QJ51RG01	Neomycin	Penethamate hydriodide	Benzathine benzylpenicillin		4	UD/udder	
QJ51RG01	Neomycin	Penethamate hydriodide	Procaine benzylpenicillin		4	UD/udder	
QJ51RG01	Neomycin	Procaine benzylpenicillin			4	UD/udder	
QJ51RG01	Neomycin	Spiramycin			4	UD/udder	
QJ51RG01	Neomycin	Streptomycin	Procaine benzylpenicillin		4	UD/udder	
QJ51CE59	Novobiocin	Procaine benzylpenicillin	Dihydrostreptomycin	Neomycin	4	UD/udder	

ATCvet code	Substance 1	Substance 2	Substance 3	Substance 4	DCDvet	Unit	Comments
QJ51RC23	Novobiocin	Procaine benzylpenicillin			4	UD/udder	
QJ51CF04	Oxacillin benzathine	Oxacillin			4	UD/udder	
QJ51CF04	Oxacillin benzathine				4	UD/udder	
QJ51RC23	Penethamate hydriodide	Procaine benzylpenicillin	Framycetin		4	UD/udder	
QJ51RC23	Procaine benzylpenicillin	Streptomycin	Nafcillin		4	UD/udder	
QJ51RC22	Procaine benzylpenicillin	Streptomycin			4	UD/udder	
QJ51RC23	Procaine benzylpenicillin				4	UD/udder	
QJ51RD34	Rifaximin	Cefacetrile			4	UD/udder	
QJ51XX01	Rifaximin				4	UD/udder	
QJ51RC26	Sulfadimidine	Trimethoprim	Cloxacillin		4	UD/udder	
QJ51RG01	Tetracycline	Bacitracin	Neomycin		4	UD/udder	

Intrauterine products – DDDvet and DCDvet values

Abbreviations used: ATCvet - anatomical therapeutic chemical classification system for veterinary medicinal products; DCDvet - defined course dose for animals; DDDvet - defined daily dose for animals; IUP/animal - intrauterine product per animal.

The combinations of substances in intrauterine products given in the table below are identified from the ESVAC sales database, as declared by 26 EU/EEA Member States.

ATCvet code	Substance 1	Substance 2	Substance 3	DDDvet	DCDvet	Unit
QG51AA03	Amoxicillin			1	2	IUP/animal
QG51AG05	Ampicillin	Cloxacillin		1	2	IUP/animal
QG51AA	Ampicillin			1	2	IUP/animal
QG51AG04	Ampicillin	Oxacillin		1	2	IUP/animal
QG51AG07	Ampicillin	Colistin		1	2	IUP/animal
QG51AA05	Cefapirin benzathine			1	2	IUP/animal
QG51AA08	Chlortetracycline			1	2	IUP/animal
QG51AG	Cloxacillin benzathine	Colistin		1	2	IUP/animal
QG51AG01	Dihydrostreptomycin	Procaine benzylpenicillin	Sulfadimidine	1	2	IUP/animal
QG51AA09	Formosulfathiazole			1	2	IUP/animal
QG51AG	Neomycin	Ampicillin		1	2	IUP/animal
QG51AG06	Neomycin	Oxytetracycline		1	2	IUP/animal
QG51AA01	Oxytetracycline			1	2	IUP/animal
QG51AG	Oxytetracycline	Sulfamonomethoxine		1	2	IUP/animal
QG51AA06	Rifaximin			1	2	IUP/animal
QG51AA02	Tetracycline			1	2	IUP/animal