

# DANMAP 2019

DANMAP 2019 - Use of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from food animals, food and humans in Denmark



## Criteria for the defining the DADDs for pigs, cattle and mink, DANMAP 2019

DANMAP reports usage of antimicrobials in different animal populations and in veterinary and human sectors. To allow for quantitative comparison in the different populations, the quantity of antimicrobials used, their potency, their formulation, the route of administration, and the age of the animals (where relevant) are accounted for by generating defined animal daily doses (DADDs).

DADD is the average maintenance dose per day for the main indication of a drug in the appropriate animal species. DADD is not defined at product level but for each antimicrobial agent, administration route, and animal species as mg active compound per kg live animal. The DADDs have been specifically defined for use in DANMAP and do not always completely match the “prescribed daily dose” or the recommended dosage in the Summaries of Product Characteristics (SPC) at <https://www.ema.europa.eu/en/medicines>.

The DADDs are based on the VetStat ADDs, but re-defined for DANMAP according to following principles:

1. Minor inconsistencies have been corrected e.g. due to rounding of numbers;
2. Approved dosage for the most widely used antimicrobial products is given priority above dosage for products that are rarely used;
3. Approved dosage for older products within the group is maintained as the common DADD even if a new product is approved with a higher dosage;
4. If the dosage for a group with large variation in approved dosages of the products, the dosages provided by “The Veterinary Formulary” [British Veterinary Association 2005, 6th edition] were applied;
5. Dosages may vary within active compound and administration route, if different dosages have been approved for different age group/indication or formulation.

When principle 3 and 4 are conflicting, principle 5 is applied.

The following tables list the DADDs, in mg active compound per kg body weight per treatment day, as applied in DANMAP 2019.

For products containing two or more active compounds, the number of DADDs are estimated for each active compound proportionally to the concentrations in the specific product. For some types of combination products, the ratio between active compounds may vary considerably. In these cases, the main antimicrobial component is given the DADD as in the most widely used similar combination products, and then the DADD for the second component is estimated using the ratio. This approach has been applied for products in ATC<sub>vet</sub> groups QJ01RA01/ RV01 (benzylpenicillinprocain and dihydrostreptomycin), QJ01FF52 (lincomycin and spectinomycin) and QJ01EW10 (sulfadiazine and trimethoprim).

For each product listed in the VetStat, the dataset provided for DANMAP contains annual sum of active compound prescribed for each animal species by age groups and indication. Based on the total prescribed amount of active compound and the assigned DADDs for each specific product, the annual numbers of kg-doses are calculated as presented in the web annex, Tables A4.1 - A4.3.

**DADD for pigs - DANMAP Defined Animal Daily Dose**

<b>ATCvet code</b>	<b>Active compound</b>	<b>Administration</b>	<b>Pharmaceutical form</b>	<b>DADD mg/kg</b>	
QA07AA01		Neomycin	Peroral	Soluble powder	16.7
			Peroral	Solution	85.0
QA07AA06	Paromomycin	Peroral	Oral solution	22.8	
		Peroral	Soluble powder	22.8	
QA07AA10	Colistin	Peroral	Oral solution	3.3	
		Peroral	Soluble powder	3.3	
QA07AA90	Dihydrostreptomycin	Peroral	Soluble tablet	25.0	
QA07AA91	Gentamicinsulfat	Peroral	Oral powder	2.0	
QA07AA92	Apramycin	Peroral	Oral powder	5.0	
		Peroral	Premix	5.0	
		Peroral	Soluble powder	10.0	
QD06BA04	Sulfamethizol	Peroral	Oral powder	21.0	
QJ01AA02	Doxycyclin	Peroral	Oral powder	12.5	
		Peroral	Oral solution	12.5	
		Peroral	Premix	12.5	
		Peroral	Soluble powder	12.5	
QJ01AA03	Chlortetracyclin	Peroral	Oral powder	20.0	
QJ01AA06	Oxytetracyclin	Parenteral	Injection	7.5	
		Peroral	Soluble powder	20.0	
QJ01BA90	Florfenicol	Parenteral	Injection	7.5	
		Peroral	Oral powder	10.0	
		Peroral	Oral solution	10.0	
		Peroral	Solution	10.0	
QJ01BA99	Florfenicol	Parenteral	Injection	7.5	
QJ01CA01	Ampicillin	Parenteral	Injection	15.0	
QJ01CA04	Amoxicillin	Parenteral	Injection	15.0	
		Peroral	Oral powder	15.0	
		Peroral	Premix	15.0	
		Peroral	Soluble powder	17.5	
QJ01CE02	Phenoxymethylpenicillin	Peroral	Soluble powder	10.0	
QJ01CE09	Benzylpenicillinprocain	Parenteral	Injection	15.0	
QJ01CE90	Benzylpenicillin	Parenteral	Injection	8.9	
QJ01CR02	Amoxicillin	Parenteral	Injection	7.0	
		Peroral	Boli	20.0	
		Peroral	Soluble powder	20.0	
		Parenteral	Injection	1.8	
	Clavulansyre	Peroral	Boli	5.0	
		Peroral	Soluble powder	5.0	
QJ01DD90	Ceftiofur	Parenteral	Injection	3.0	
		Parenteral	Injection, pro	1.0	
QJ01DE90	Cefquinom	Parenteral	Injection	2.0	
QJ01EW10	Sulfadiazin	Parenteral	Injection	13.4	
		Peroral	Boli	25.0	
		Peroral	Oral powder	25.0	
		Peroral	Premix	25.0	
		Parenteral	Injection	2.7	
		Peroral	Boli	5.0	
		Peroral	Oral powder	5.0	
		Peroral	Premix	5.0	
QJ01EW11	Sulfametoxazol	Peroral	Oral solution	21.0	
		Peroral	Oral solution	4.2	
QJ01EW13	Sulfadoxin	Parenteral	Injection	13.4	
		Parenteral	Injection	2.7	
QJ01EW14	Sulfatroxazol	Parenteral	Injection	13.4	
		Parenteral	Injection	2.7	

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DADD for pigs - DANMAP Defined Animal Daily Dose - Continued

ATCvet code	Active compound	Administration	Pharmaceutical form	DADD mg/kg
QJ01FA02	Spiramycin	Parenteral	Injection	10.0
QJ01FA90	Tylosin	Parenteral	Injection	6.6
		Peroral	Oral powder	4.0
		Peroral	Premix	4.0
		Peroral	Soluble powder	8.3
QJ01FA91	Tilmicosin	Peroral	Oral powder	16.0
		Peroral	Oral solution	16.0
		Peroral	Premix	16.0
QJ01FA92	Acetylisovaleryltylosin	Peroral	Oral powder	4.3
		Peroral	Premix	4.3
		Peroral	Soluble powder	5.0
QJ01FA94	Tulathromycin	Parenteral	Injection	0.5
QJ01FA95	Gamithromycin	Parenteral	Injection	1.2
QJ01FA96	Tildipirosin	Parenteral	Injection	0.8
QJ01FF02	Lincomycin	Parenteral	Injection	10.0
		Peroral	Premix	5.0
		Peroral	Soluble powder	10.0
QJ01FF52	Lincomycin	Parenteral	Injection	7.5
		Peroral	Oral powder	2.5
		Peroral	Premix	2.5
		Peroral	Soluble powder	3.3
	Spectinomycin	Parenteral	Injection	15.0
		Peroral	Oral powder	2.5
		Peroral	Premix	2.5
		Peroral	Soluble powder	6.5 <sup>a)</sup>
		Peroral	Soluble powder	6.6 <sup>a)</sup>
QJ01GB03	Gentamicin	Peroral	Solution	2.5
QJ01GB90	Apramycin	Peroral	Oral powder	5.0
QJ01MA90	Enrofloxacin	Parenteral	Injection	3.7
QJ01MA93	Marbofloxacin	Parenteral	Injection	2.0
QJ01RA01	Benzylpenicillinprocain	Parenteral	Injection	10.0
	Dihydrostreptomycin	Parenteral	Injection	10.0 <sup>a)</sup>
		Parenteral	Injection	12.5 <sup>a)</sup>
QJ01RV01	Benzylpenicillinprocain	Parenteral	Injection	10.0
	Dihydrostreptomycin	Parenteral	Injection	12.5
QJ01XQ01	Tiamulin	Parenteral	Injection	10.9
		Peroral	Oral powder	5.0
		Peroral	Oral solution	7.0
		Peroral	Premix	5.0
		Peroral	Soluble powder	7.0
QJ01XQ02	Valnemulin	Peroral	Oral powder	3.5
		Peroral	Premix	3.5
QP51AG04	Sulfaclozin	Peroral	Soluble powder	36.0

a) For products containing two or more active compounds, the number of DADDs are estimated for each active compound proportionally to the concentrations in the specific product. For some types of combination products, the ratio between active compounds may vary considerably. In these cases, the main antimicrobial component is given the DADD as in the most widely used similar combination products, and then the DADD for the second component is estimated using the ratio. This approach has been applied for products in ATC<sub>vet</sub> groups QJ01RA01/ RV01 (benzylpenicillinprocain and dihydrostreptomycin), QJ01FF52 (lincomycin and spectinomycin) and QJ01EW10 (sulfadiazine and trimethoprim)

**DADD for Cattle - DANMAP Defined Animal Daily Dose**

ATCvet code	Active compound	Administration	Pharmaceutical form	DADD mg/kg
QA07AA01	Neomycin	Peroral	Soluble powder	16.7
		Peroral	Solution	30.0
QA07AA06	Paromomycin	Peroral	Oral solution	26.3
		Peroral	Soluble powder	26.3
QA07AA10	Colistin	Peroral	Oral solution	3.3
		Peroral	Soluble powder	3.3
QA07AA90	Dihydrostreptomycin	Peroral	Soluble tablet	5.0
QA07AA92	Apramycin	Peroral	Oral powder	13.5
		Peroral	Premix	13.5
QJ01AA02	Doxycyclin	Peroral	Soluble powder	30.0
		Peroral	Oral solution	12.5
		Peroral	Premix	12.5
		Peroral	Soluble powder	12.5
QJ01AA03	Chlortetracyclin	Peroral	Oral powder	20.0
QJ01AA06	Oxytetracyclin	Parenteral	Injection	7.5
		Peroral	Soluble powder	25.0
QJ01BA90	Florfenicol	Parenteral	Injection	10.0
		Peroral	Oral powder	10.0
		Peroral	Solution	10.0
QJ01BA99	Florfenicol	Parenteral	Injection	10.0
QJ01CA01	Ampicillin	Parenteral	Injection	15.0
QJ01CA04	Amoxicillin	Parenteral	Injection	15.0
		Peroral	Premix	15.0
		Peroral	Soluble powder	17.5
QJ01CE01	Benzylpenicillinkalium	Parenteral	Injection	9.4
QJ01CE09	Benzylpenicillinprocain	Parenteral	Injection	15.0
QJ01CE90	Benzylpenicillin	Parenteral	Injection	8.9
QJ01CR02	Amoxicillin	Parenteral	Injection	7.0
		Peroral	Boli	20.0
	Clavulansyre	Parenteral	Injection	1.8
		Peroral	Boli	5.0
QJ01DD90	Ceftiofur	Parenteral	Injection	1.0
		Parenteral	Injection, pro	1.0
QJ01DE90	Cefquinom	Parenteral	Injection	1.5
QJ01EW03	Baquiloprim	Peroral	Boli	4.8
		Peroral	Boli	43.2
QJ01EW10	Sulfadiazin	Parenteral	Injection	13.4
		Peroral	Boli	25.0
		Peroral	Oral paste	25.0
		Peroral	Oral powder	25.0
		Peroral	Premix	25.0
		Parenteral	Injection	2.7
		Peroral	Boli	5.0
	Trimethoprim	Peroral	Oral paste	5.0
		Peroral	Oral powder	5.0
		Peroral	Premix	5.0
		Peroral	Oral solution	21.0
QJ01EW11	Sulfametoxazol	Peroral	Oral solution	21.0
	Trimethoprim	Peroral	Oral solution	4.2
QJ01EW13	Sulfadoxin	Parenteral	Injection	13.4
		Parenteral	Injection	2.7
QJ01EW14	Sulfatroxazol	Parenteral	Injection	13.4
		Parenteral	Injection	2.7

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DADD for Cattle - DANMAP Defined Animal Daily Dose - continued

ATCvet code	Active compound	Administration	Pharmaceutical form	DADD mg/kg
QJ01FA02	Spiramycin	Parenteral	Injection	10.0
QJ01FA90	Tylosin	Parenteral	Injection	6.6
		Peroral	Oral powder	4.0
		Peroral	Premix	4.0
		Peroral	Soluble powder	20.0
QJ01FA91	Tilmicosin	Peroral	Oral powder	16.0
		Peroral	Oral solution	25.0
		Peroral	Premix	16.0
QJ01FA94	Tulathromycin	Parenteral	Injection	0.5
QJ01FA95	Gamithromycin	Parenteral	Injection	1.2
QJ01FA96	Tildipirosin	Parenteral	Injection	0.8
QJ01FF02	Lincomycin	Parenteral	Injection	10.0
		Peroral	Premix	5.0
		Peroral	Soluble powder	10.0
QJ01FF52	Lincomycin	Parenteral	Injection	7.5
		Peroral	Premix	2.5
		Peroral	Soluble powder	3.3
	Spectinomycin	Parenteral	Injection	15.0
		Peroral	Premix	2.5
		Peroral	Soluble powder	6.6
QJ01GB03	Gentamicin	Peroral	Solution	2.5
QJ01MA	Pradofloxacin	Peroral	Oral solution	3.7
QJ01MA90	Enrofloxacin	Parenteral	Injection	3.7
QJ01MA92	Danofloxacin	Parenteral	Injection	1.9
QJ01MA93	Marbofloxacin	Parenteral	Injection	2.0
QJ01RA01	Benzylpenicillinprocain	Parenteral	Injection	10.0
	Dihydrostreptomycin	Parenteral	Injection	10.0
		Parenteral	Injection	12.5 <sup>a)</sup>
QJ01RV01	Benzylpenicillinprocain	Parenteral	Injection	10.0 <sup>a)</sup>
	Dihydrostreptomycin	Parenteral	Injection	12.5
QJ01XQ01	Tiamulin	Parenteral	Injection	10.9
		Peroral	Oral powder	5.0
		Peroral	Oral solution	7.0
		Peroral	Premix	5.0
		Peroral	Soluble powder	7.0

a) For products containing two or more active compounds, the number of DADDs are estimated for each active compound proportionally to the concentrations in the specific product. For some types of combination products, the ratio between active compounds may vary considerably. In these cases, the main antimicrobial component is given the DADD as in the most widely used similar combination products, and then the DADD for the second component is estimated using the ratio. This approach has been applied for products in ATC<sub>vet</sub> groups QJ01RA01/ RV01 (benzylpenicillinprocain and dihydrostreptomycin), QJ01FF52 (lincomycin and spectinomycin) and QJ01EW10 (sulfadiazine and trimethoprim)

**DADD for fur animals - DANMAP Defined Animal Daily Dose**

<b>ATCvet code</b>	<b>Active compound</b>	<b>Administration</b>	<b>Pharmaceutical form</b>	<b>DADD mg/kg</b>
QA07AA01	Neomycin	Peroral	Soluble powder	14.0
		Peroral	Solution	14.0
QA07AA06	Paromomycin	Peroral	Soluble powder	28.0
QA07AA10	Colistin	Peroral	Oral solution	5.0
		Peroral	Soluble powder	5.0
QA07AA90	Dihydrostreptomycin	Peroral	Soluble tablet	25.0
QA07AA92	Apramycin	Peroral	Oral powder	5.0
		Peroral	Soluble powder	9.2
QJ01AA02	Doxycyclin	Peroral	Oral powder	10.0
		Peroral	Oral solution	10.0
		Peroral	Premix	10.0
		Peroral	Soluble powder	10.0
QJ01AA03	Chlortetracyclin	Peroral	Oral powder	25.0
QJ01AA06	Oxytetracyclin	Parenteral	Injection	7.5
		Peroral	Soluble powder	50.0
QJ01BA90	Florfenicol	Parenteral	Injection	15.0
		Peroral	Oral solution	15.0
		Peroral	Solution	15.0
QJ01BA99	Florfenicol	Parenteral	Injection	15.0
QJ01CA01	Ampicillin	Parenteral	Injection	15.0
QJ01CA04	Amoxicillin	Parenteral	Injection	17.5
		Peroral	Premix	20.0
		Peroral	Soluble powder	20.0
QJ01CE02	Phenoxymethylpenicillin	Peroral	Soluble powder	10.0
QJ01CE09	Benzylpenicillinprocain	Parenteral	Injection	20.0
QJ01CE90	Benzylpenicillin	Parenteral	Injection	8.9
QJ01CR02	Amoxicillin	Parenteral	Injection	7.0
		Peroral	Boli	20.0
		Peroral	Soluble powder	20.0
		Parenteral	Injection	1.8
		Peroral	Boli	5.0
QJ01DD90	Ceftiofur	Peroral	Soluble powder	5.0
		Parenteral	Injection	3.0
		Parenteral	Injection, pro	3.0
QJ01DD91	Cefovecin	Parenteral	Injection	8.0
QJ01DE90	Cefquinom	Parenteral	Injection	2.0
QJ01EW10	Sulfadiazin	Parenteral	Injection	13.4
		Peroral	Oral powder	25.0
		Peroral	Premix	25.0
		Parenteral	Injection	2.7
		Peroral	Oral powder	5.0
QJ01EW11	Sulfametoxazol	Peroral	Premix	5.0
		Peroral	Oral solution	25.0
		Peroral	Oral solution	5.0
QJ01EW13	Sulfadoxin	Parenteral	Injection	13.4
		Parenteral	Injection	2.7

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DADD for fur animals - DANMAP Defined Animal Daily Dose - continued

ATCvet code	Active compound	Administration	Pharmaceutical form	DADD mg/kg
QJ01FA02	Spiramycin	Parenteral	Injection	6.6
QJ01FA90	Tylosin	Parenteral	Injection	6.6
		Peroral	Oral powder	10.0
		Peroral	Premix	10.0
		Peroral	Soluble powder	10.0
QJ01FA91	Tilmicosin	Peroral	Oral solution	16.0
QJ01FA92	Acetylisovalerytylosin	Peroral	Soluble powder	5.0
QJ01FA94	Tulathromycin	Parenteral	Injection	0.5
QJ01FA95	Gamithromycin	Parenteral	Injection	3.0
QJ01FA96	Tildipirosin	Parenteral	Injection	1.0
QJ01FF02	Lincomycin	Parenteral	Injection	10.0
		Peroral	Premix	5.0
		Peroral	Soluble powder	10.0
QJ01FF52	Lincomycin	Parenteral	Injection	7.5
		Peroral	Premix	2.5
		Peroral	Soluble powder	3.3
	Spectinomycin	Parenteral	Injection	15.0
		Peroral	Premix	2.5
		Peroral	Soluble powder	6.7
QJ01GB03	Gentamicin	Peroral	Solution	2.5
QJ01MA90	Enrofloxacin	Parenteral	Injection	5.0
QJ01RA01	Benzylpenicillinprocain	Parenteral	Injection	10.0
	Dihydrostreptomycin	Parenteral	Injection	10.0 <sup>a)</sup>
		Parenteral	Injection	12.5 <sup>a)</sup>
QJ01RV01	Benzylpenicillinprocain	Parenteral	Injection	10.0
	Dihydrostreptomycin	Parenteral	Injection	12.5
QJ01XQ01	Tiamulin	Parenteral	Injection	10.9
		Peroral	Oral powder	5.0
		Peroral	Oral solution	7.0
		Peroral	Premix	5.0
QJ01XQ02	Valnemulin	Peroral	Premix	3.5
QP51AG04	Sulfaclozin	Peroral	Soluble powder	36.0

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