

Report of the *ad hoc* group of the Technical Reference Document for Antimicrobial Agents of Veterinary Importance for Cats and Dogs

Original: English (EN)
April 2023-September 2024
Paris



World Organisation
for Animal Health

Antimicrobial Resistance and
Veterinary Products Department
amrvp.dept@woah.org

12, rue de Prony
75017 Paris, France

T. +33 (0)1 44 15 18 88
F. +33 (0)1 42 67 09 87
woah@woah.org
www.woah.org

1. Introduction

The WOAHA List of Antimicrobial Agents of Veterinary Importance (hereafter, “the WOAHA List”) was adopted by the WOAHA International Committee at its 75th General Session in May 2007 (Resolution No. XXVIII). The WOAHA List was updated and adopted in May 2013, May 2015, May 2018 and May 2024 by the WOAHA World Assembly of Delegates. The subdivision of the WOAHA List by animal species follows recommendations by the participants of the 2nd WOAHA Global Conference on Antimicrobial Resistance and Prudent Use of Antimicrobials in 2018 in Marrakesh, and of the previous work conducted by the WOAHA ad hoc Group on Antimicrobial Resistance. This task was delegated to the WOAHA Working Group on Antimicrobial Resistance (hereafter, the “AMRWG”) created by the General Director in 2019. Ad hoc groups and subgroups composed by members of the AMRWG and/or external experts prepared the Technical Reference Documents for Antimicrobial Agents of Veterinary Importance (hereafter, the “technical reference document”) for Poultry (October 2020), Aquatic and Swine animals (October 2022).

Veterinarians working in companion animals practice have the dual responsibility of ensuring the well-being and health of companion animals (cats and dogs) and of protecting human health by minimising the risk of resistant bacteria disseminated at household and veterinary practice levels and into the environment through animal and clinical waste.

The objective of the technical reference document is to support responsible and prudent use of antimicrobials in companion animals, without serving as a treatment guideline. It is envisaged that WOAHA Members will use the information in the technical reference document to update existing guideline documents for the responsible and prudent use of antimicrobials in cats and dogs. This document will contribute to development of national and/or regional treatment guidelines, advice on prevention and best animal health management, risk management, and risk prioritisation to minimise and contain antimicrobial resistance.

The work on the technical reference document was conducted by an ad hoc group of experts recruited through an open call and chaired by a member of the AMRWG ensuring geographical and gender representation ([Annex 1](#)) and it started in April 2023 and was completed in late September 2024. The ad hoc group met face-to-face on the 25-26 April 2023 at WOAHA headquarters and subsequently held four additional meetings via teleconference. Regular updates were provided to the AMRWG during their biannual meetings. Feedback was sought from the AMRWG in June 2024 and from external experts on companion animal health management, Collaborating Centres and stakeholder organisations between mid-July and September 2024 ([Annex 2](#)). The technical reference document was submitted for consideration and endorsement to the AMRWG in October 2024.

2. Rationale

The ad hoc group agreed that the following antimicrobial agents are “authorised for use” for either cats (FEL) and/or dogs (CAN) or both species in one or more countries on the technical reference document; therefore the reference to cats (FEL) and/or dogs (CAN) was added to the WOAHA List accordingly:

Aminocyclitol

- Spectinomycin

Aminoglycosides

- Dihydrostreptomycin
- Streptomycin

Aminoglycosides + 2 Deoxystreptamine

- Amikacin
- Framycetin (topical use only)
- Gentamicin
- Kanamycin
- Neomycin
- Paromomycin (topical use only)
- Tobramycin

Amphenicols

- Florfenicol (vet only)
- Thiamphenicol

Ansamycins - Rifamycins

- Rifaximin (topical use only)

Cephalosporins- 1st Generation

- Cefalexin (topical use only)
- Cefalonium (vet only; topical use only; CAN only)
- Cefalotin (CAN only)

Cephalosporins- 3rd Generation

- Ceftriaxone (CAN only)
- Ceftriaxone (CAN only)

Fusidane

- Fusidic acid (topical use only)

Lincosamides

- Lincomycin

Macrolides- 14 membered ring

- Erythromycin

Macrolides- 16 membered ring

- Tylosin (vet only)

Natural penicillins (including esters and salts)

- Benzylpenicillin
- Procaine Benzylpenicillin/ Benzathine Benzylpenicillin
- Penethamate hydriodide (vet only; CAN only)

Aminopenicillin

- Amoxicillin
- Ampicillin

Aminopenicillin plus betalactamase inhibitor

- Amoxicillin + Clavulanic acid

Phenoxyphenicillins

- Phenoxyphenylpenicillin (CAN only)

Antistaphylococcal penicillins

- Cloxacillin (topical use only)

Polypeptides

- Bacitracin (topical use only)

Polymyxins

- Polymyxin B (topical use only)
- Colistin (topical use only)

Quinolones 1st generation

- Flumequine

Quinolones 2nd generation (Fluoroquinolones)

- Enrofloxacin (vet only)
- Marbofloxacin (vet only)
- Norfloxacin
- Ofloxacin (topical use only)
- Orbifloxacin (vet only)

Sulfonamides

- Phthalylsulfathiazole
- Sulfacetamide
- Sulfadiazine
- Sulfamethoxazole
- Sulfadimethoxine
- Sulfadimidine
- Sulfadoxine
- Sulfafurazole (CAN only)
- Sulfaguanidine
- Sulfamerazine
- Sulfamonomethoxine
- Sulfanilamide (topical use only)
- Sulfapyridine
- Sulfamethoxypridazine (previous classified under "Sulfonamides + diaminopyrimidines. The change in the WOAHL List will be conducted after the main species-specific Technical Reference Documents are finalised)

Sulfonamides + diaminopyrimidines

- Trimethoprim + Sulfonamide

Tetracyclines

- Chlortetracycline (topical use only)
- Doxycycline
- Oxytetracycline
- Tetracycline

Thiospeptides

- Thiostrepton

The *ad hoc* group agreed that the following molecules should **not be included** on the technical reference document (**no change required on the WOAHL List**):

Aminocoumarin

- Novobiocin

Aminoglycosides + 2 Deoxystreptamine

- Apramycin
- Astromycin

Ansamycins - Rifamycins

- Rifampicin

Arsenicals

- Nitarsone (vet only)
- Roxarsone (vet only)

Bicyclomycin

- Bicozamycin

Cephalosporins 1st Generation

- Cefacetile
- Cefapirin
- Cefazolin

Cephalosporins 2nd Generation

- Cefuroxime

Cephalosporins 3rd Generation

- Cefoperazone

Cephalosporins 4th Generation

- Cefquinome

Ionophores

- Lasalocid (vet only)
- Maduramicin (vet only)
- Monensin (vet only)
- Narasin (vet only)
- Salinomycin (vet only)
- Semduramicin (vet only)

Lincosamides

- Pirlimycin (vet only)

Macrolides (14-membered ring)

- Oleandomycin

Macrolides (15-membered ring)

- Gamithromycin
- Tulathromycin

Macrolides (16-membered ring)

- Carbomycin
- Josamycin
- Kitasamycin (vet only)
- Mirosamicin
- Spiramycin
- Terdecamycin
- Tildipirosin
- Tilmicosin (vet only)
- Tylvalosin (vet only)

Macrolides 17-membered ring

- Sedecamycin

Orthosomycin

- Avilamycin (vet only)

Natural penicillins (including esters and salts)

- Benethamine penicillin

Amidinopenicillins

- Mecillinam

Aminopenicillins

- Hetacillin

Aminopenicillin plus betalactamase inhibitor

- Ampicillin + Sulbactam

Carboxypenicillins

- Ticarcillin
- Tobicillin

Ureidopenicillins

- Aspoxicillin

Phenoxypenicillins

- Pheneticillin

Antistaphylococcal penicillins

- Dicloxacillin
- Nafcillin
- Oxacillin

Phosphonic acid derivatives

- Fosfomicin

Pleuromutilins

- Tiamulin (vet only)
- Valnemulin (vet only)

Polypeptides

- Enramycin
- Gramicidin

Quinolones 1st generation

- Miloxacin
- Nalidixic acid
- Oxolinic acid

Quinolones 2nd generation

- Ciprofloxacin
- Danofloxacin
- Difloxacin
- Sarafloxacin

Quinoxalines

- Carbadox (vet only)
- Olaquinox (vet only)

Sulfonamides

- Sulfachlorpyridazine
- Sulfamethoxydiazine
- Sulfaquinoxaline

Sulfonamides + Diaminopyrimidines

- Ormetoprim + Sulfonamide

Diaminopyrimidines

- Baquiloprim
- Ormetoprim
- Trimethoprim

Thiopeptides

- Nosiheptide

Halogenated hydroxyquinolines

- Halquinol

The *ad hoc* group agreed that the following antimicrobial agents and classes should **be added** to both the technical reference document and WOAHL List, with the **reference to cats (FEL) and/or dogs (CAN) as currently missing from the WOAHL List:**

Amphenicols

- Chloramphenicol

Cephalosporin 3rd generation

- Cefixime
- Cefovecin
- Cefpodoxime

Lincosamides

- Clindamycin

Macrolides (15-membered ring)

- Azithromycin

Quinolones 2nd generation (Fluoroquinolones)

- Ibafoxacin
- Levofloxacin
- Pradofloxacin

Monoxycarboic acid (New class)

- Mupirocin

Nitroimidazoles (New class)

- Metronidazole
- Ornidazole (CAN only)
- Tinidazole

The *ad hoc* group agreed to **update the nomenclature** of the antimicrobial agents in the Technical Reference Document with their **Non-Proprietary Names (INNs) in line with international standards**. The old names of the antimicrobial agents were kept as synonyms in the list. The names of antimicrobial agents will also be updated in the WOAHA List; the latter will be updated after all the main species-specific technical reference documents are finalised:

Aminoglycosides + 2 Deoxystreptamine

- Astromycin (previously listed as Fortimycin)

Cephalosporins 1st Generation

- Cefapirin (Cefapirin)

Macrolides (16-membered ring)

- Mirosamycin (Mirosamycin)

Natural penicillins (including esters and salts)

- Procaine benzylpenicillin (Benzylpenicillin procaine)
- Benzathine benzylpenicillin (Benzathine penicillin)

Polymyxins

- Polymyxin B (Polymixin B)
- Colistin (Polymyxin E)

Quinolones 1st Generation

- Flumequine (Flumequin)

Sulfonamides (note: the two sulfonamides named below had been previously misnamed and have been renamed accordingly taking into account existing INNs. These will be updated in the WOAHA List):

- Sulfamethoxazole (Sulfadimethoxazole)
- Sulfametoxydiazine (Sulfamethoxine)

The previous antimicrobial class **Thiostrepton has been reclassified as Thiopeptides** as this the most accurate classification for Nosiheptide according to current scientific evidence.

The *ad hoc* group agreed to add an appendix (Appendix 1) on **off-label use** of antimicrobial agents for treatment of specific bacterial infections in cats and dogs as this is common practice in several countries and territories where there is limited access to veterinary medicinal products for these species and/or there are no veterinary formulations available. Moreover, the appendix refers to the importance of off-label/ extra label use of antimicrobials to ensure animal health and welfare and to protect public health through the treatment of zoonotic bacterial infections in cats and dogs.

Annex 1. List of Participants

**MEETING OF THE WOAHS SUBGROUP OF THE WORKING GROUP ON ANTIMICROBIAL RESISTANCE ON
THE REFERENCE TECHNICAL DOCUMENT OF ANTIMICROBIALS OF VETERINARY IMPORTANCE FOR
CATS AND DOGS**

April 2023 – September 2024

MEMBERS OF THE SUBGROUP

Dr Jennifer Granick
UNITED STATES of AMERICA

Dr Kazuki Harada
JAPAN

Dr Stephen Page (Chair)
AUSTRALIA

Dr Rodrigo Rabelo
BRAZIL

Dr Delphine Urban
FRANCE

Dr Barbara Willi
SWITZERLAND

Annex 2. List of WOAHP External Experts on Companion Animal Health

**MEETING OF THE WOAHP SUBGROUP OF THE WORKING GROUP ON ANTIMICROBIAL RESISTANCE ON
THE REFERENCE TECHNICAL DOCUMENT OF ANTIMICROBIALS OF VETERINARY IMPORTANCE FOR
CATS AND DOGS**

April 2023 – September 2024

Dr Rosanne Jepson
UNITED KINGDOM

Dr Valeria Rumi
ARGENTINA

Prof Scott Weese
CANADA

LIST OF NON-GOVERNMENTAL ANIMAL HEALTH ORGANISATIONS

HealthforAnimals
BELGIUM

<https://www.healthforanimals.org/>

World Small Animal Veterinary Association (WSAVA)
CANADA

<https://wsava.org/>

World Veterinary Association (WVA)

BELGIUM

<https://worldvet.org/>

LIST OF COLLABORATING CENTRES

French Agency for Food, Environmental and Occupational Health & Safety (ANSES)
Fougères, FRANCE

National Institute of Animal Health (NIAH)
JAPAN

National Veterinary Assay Laboratory (NVAL)
JAPAN

École Inter-Etats des Sciences et Médecine Vétérinaires (EISMV)
SENEGAL

Centre National de Veille Zoosanitaire (CNVZ)
TUNISIA

US Food and Drug Administration (FDA)
UNITED STATES OF AMERICA