

Report of the Meeting of the WOAH Working Group on Antimicrobial Resistance

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1. Welcome and opening of the meeting

The Working Group on Antimicrobial Resistance (AMR) (hereafter referred to as the “AMRWG”) and observers from the Quadripartite organisations (FAO¹ and WHO²), met between 27 – 29 February 2024, at the WOAHA headquarters, in Paris. The observer from UNEP³ could not attend the meeting due to conflicting priorities within their scarcely resourced team on AMR. WOAHA hopes that the situation can be resolved and that their presence will be confirmed in future meetings.

Dr Tomoko Ishibashi and Dr Yugueros-Marcos welcomed the AMRWG Members and Dr Yugueros-Marcos thanked Dr Donald Prater for his valuable contributions to the AMRWG and WOAHA, ahead of his resignation in 2024. Dr Yugueros-Marcos provided a brief update to the AMRWG on the recruitment process of three new AMRWG Members to replace Dr Gérard Moulin, Prof Moritz van Vuuren and Dr Donald Prater, to be presented for information of WOAHA’s Council during their meeting on 7 March, 2024. The new Members are expected to join the AMRWG at its next meeting in October 2024.

Dr Eloit concluded the AMRWG welcome and expressed that there must be a change to the traditional use of antimicrobials, emphasising the importance of investing in new tools to address animal health issues, without relying on antimicrobials. She noted that there is a need to continue to advocate for the phasing out of antimicrobials used for non-veterinary medical use, such as growth promotion. As the AMRWG looks to the future, scientific expertise may need to be managed differently and Specialist Commissions and Working Groups may need to be re-framed. Relationships with and roles of Collaborating Centres (CC) will also need to be considered, to ensure that capabilities of the CCs are taken into consideration. The AMRWG Members were thanked for their attendance and for the hard work carried out on AMR over the years.

1.1. Adoption of the agenda

The AMRWG adopted the agenda, which is presented in [Annex 1](#), alongside the List of Participants in [Annex 2](#).

1.2. Appointment of rapporteur

Dr Tomoko Ishibashi chaired the AMRWG and Dr Donald Prater acted as rapporteur.

2. Landscape I

2.1. FAO InFARM and RENOFARM – Dr Alejandro Dorado Garcia

Dr Alejandro Dorado Garcia updated the AMRWG on FAO’s below programmes:

2.1.1. [Renofarm](#)

Renofarm is a 10 year action-oriented initiative which engages the entire production chain to reduce the need for antimicrobial use (AMU) on farms. Key targets are: a) 100 countries to participate in the initiative, b) 50% of animal/plant health workers from participating countries to be trained and, c) 80% of all participating countries to be contributing data to InFARM. Since 2022, pilots have taken place in Nigeria, Uganda, and Indonesia.

Discussion

- The AMRWG discussed the Indonesia pilot and requested further information, including the certification program. Dr Dorado Garcia will gather details for the AMRWG. The AMRWG also discussed the role of retailers in certification programs, as these have been successful in other countries, helping to further encourage AMU reduction on farms.
- The AMRWG requested more information on how countries are being encouraged to sign-up to Renofarm and FAO’s selection process. Dr Dorado Garcia explained that more than 50 countries have signed up so far. FAO is trying to put an ‘AMR lens’ on all initiatives and expand Renofarm by way of collateral activities.
- The AMRWG asked if there had been any discussion on the term ‘agri-environment’. Dr Dorado Garcia explained that this refers specifically to a food production environment or an environment in close proximity to food production according to Codex definition.

¹ FAO- Food and Agriculture Organization of the United Nations

² WHO- World Health Organization

³ UNEP- United Nations Environment Program

2.1.2. [InFARM](#)

FAO's InFARM system will support countries in the collection, analysis, visualisation and interpretation of their AMR data. The beta version of the programme was developed in 2022; the pilot and finalisation of the IT system took place between March and October 2023. The first annual open call for data will take place in 2024 accompanied by regional training, starting in Bangkok, to help participants develop skills to use the data for risk analysis and policy briefs, etc. The first InFARM report will be published in 2025.

Discussion

- The AMRWG discussed the pilot and the number of countries which participated; Dr Dorado Garcia confirmed that 65 focal points and 26 countries participated in the pilot; it is envisaged that up to three focal points will be appointed per country. Dr Dorado Garcia explained that participation will be increased through FAO's Members gateway, a more consolidated set of materials and through the FAO's Chief Veterinary Officer (CVO) and other FAO's networks. Moreover, three regional workshops will be organised this year to encourage engagement.
- The AMRWG pointed out that AMR data is still underrepresented for the environment. The AMRWG discussed the possibility of surveillance through the Quadripartite, including UNEP to cover environmental data, which is currently being explored.
- The AMRWG stated that the standardisation of analytical methods used by laboratories is critical and asked how this is being addressed. Dr Dorado Garcia explained that countries are being encouraged to submit any AMR data which will be analysed in its current state; data may be reanalysed at a future date.

2.2. WHO Medically Important Antimicrobials (MIA) List and other AMR activities – Dr Jorge Matheu

Dr Jorge Matheu updated the AMRWG on the below WHO activities:

- [WHO's List of Medically Important Antimicrobials \(WHO MIA List\)](#): the new List was launched on 11 February 2024; translations will follow at the end of March. A global webinar on the List is planned for 20 March 2024 and will count on WOA's participation.
- [The People-Centred Approach To Addressing AMR In Human Health](#): this new approach in tackling AMR will prioritise people's needs and system challenges, with a core package of 13 evidence-based human health AMR interventions.
- [The AMR Diagnostic Initiative](#): Developed to address the need for improved access to diagnostics for AMR, this initiative aims to bring diagnostics to the forefront of the global AMR response and achieve equitable access to quality testing for common bacterial and fungal pathogens and associated AMR across the health system.
- [Bacterial Priority Pathogen List](#): this List will be updated in the upcoming weeks and will address identified gaps and integrate lessons learned from the previous version. Additions include significant evidence on the burden of AMR from the [GRAM study](#).
- [The AWaRe classification of antibiotics for evaluation and monitoring of use](#): provides concise, evidence-based guidance on antibiotic choice, dose, route of administration and duration of treatment for over 30 of the most common clinical infections in both primary health care and hospital settings.
- [GLASS-AMC: Antimicrobial Consumption surveillance](#): 90 countries have enrolled in GLASS-AMC as of 2024, with 62 countries having provided AMC data by the end of 2022. Further support will be provided to help countries consolidate country participation and to submit more robust data.

Discussion

- The AMRWG asked for further information on the significant changes made to the WHO MIA List, with Dr Matheu explaining that there are now three categories for antimicrobials; a) used in humans only; b) used in humans and animals and c) used in animals only. The new categorisation and prioritisation criteria have resulted in the move of phosphonic acid derivatives (Fosfomycin) to Highest Priority Critical Antimicrobials (HPCIA), whilst macrolides are no longer HPCIA.

- The AMRWG noted that the AWaRe's list's distinction between topical and systemic is helpful and not something that is currently done in the WOAH list of antimicrobials of veterinary importance, despite the topical and systemic uses having different levels of risk.
- The AMRWG enquired about the use of the AWaRe list by countries. Dr Matheu explained that the AWaRe list classifies antimicrobials as Access, Watch and Reserve, which helps to show countries how they can focus on essential antimicrobials. According to AWaRe, 'Access' antimicrobials should be used as first line treatments, whilst those under 'Watch' are second line treatments, and their use should be supported by antimicrobial susceptibility testing (AST). 'Reserve' antimicrobials should only be used when considering infections caused by multidrug resistant (MDR) bacteria.

2.3. Update on the activities of the Therapeutic Guidelines Group of the World Small Animal Veterinary Association (WSAVA TGG) – Dr Stephen Page

The second edition of the [List of Essential Medicines for Cats and Dogs](#) was published in late 2023 and includes 203 essential medicines in core and complementary categories. The list highlights that access to medicines is an emerging issue, with many being borrowed from the human health sector. In 2024, the TGG will continue to investigate the disposal of leftover medicines, create an infographic on accessibility of drugs based on a global survey on the availability of core essential medicines for cats and dogs and hold the [WSAVA Congress in China in September 2024](#). Further key activities include developing a core list of guidelines for responsible use of antimicrobials for companion animals for the Global Resources Repository and a news issues forum where particular questions on antimicrobials can be answered.

Discussion

- Further information was requested on who will be surveyed on leftover medicines, with confirmation provided that this would be 1-2 focal points per country to explore the regulatory environment and if it is being applied in WSAVA member countries.
- A series of short videos will be released soon by the WSAVA TGG to increase awareness of antimicrobials not needing to be the first line of action. The first video will be on management of diarrhoea in cats and dogs.

3. Landscape II

3.1. Quadripartite overview of work on AMR- WOAH – Dr Javier Yugueros-Marcos and Dr Holy Akwar

Key Quadripartite Joint Secretariat (QJS):

The QJS [website](#) has been launched and provides a significant amount of information around its joint work, including the first QJS annual report.

The Quadripartite One Health Legislative Assessment Tool for Antimicrobial Resistance ([OHLAT](#)) is available for countries to identify & analyse AMR-relevant legislation. Technical guidelines are near completion, which will help to support countries implement integrated AMR surveillance.

[AMR Global Leaders Group](#) (GLG): The GLG continues to refine recommendations for the upcoming High-Level Meeting (HLM) on AMR, around seven key areas: 1) Financing; 2) Accountable governance; 3) Surveillance for action; 4) Transformed systems; 5) Environment; 6) AMR and pandemic preparedness and response (PPR); 7) Targets.

[Multi-Partnership Trust Fund \(MPTF\)](#): The MPTF Secretariat is undergoing restructuring to improve efficiencies but continues to manage projects in nine countries and has completed others in five. The Senior Management Group (SMG) approved a revised proposal of its operational manual during their meeting on Feb 15, 2024.

[AMR Multi-Stakeholder Partnership Platform \(PP\)](#): The 1st inaugural plenary assembly was held on November 15-16 2023, in Rome, Italy. The Steering Committee received and approved 16 Action Groups, including one dedicated to the United Nations General Assembly (UNGA) 2024.

Discussion and recommendations

- The AMRWG discussed the lack of environmental representation in the Quadripartite and sought examples where the environment has been effectively included. Dr Akwar explained that funding is limited but prioritisation discussions are ongoing for environmental projects. Dr Mateus informed the AMRWG that the MPTF global project on the environmental dimensions of AMR conducted capacity building workshops on safe disposal of medicines in five MPTF countries (Indonesia, Morocco, Peru, Tajikistan and Zimbabwe) for inclusion in their National Action Plans (NAP).

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- The AMRWG discussed the importance of UNEP representation and hopes for them to join their meetings in the future and to continue to explore the possibility of including UNEP in already existing workstreams to ensure environmental representation.

3.2. UNGA 2024- concept note update – Dr Javier Yugueros-Marcos

The AMRWG was informed on WOAHA's four priority key asks for consideration in the political declaration to be agreed at the HLM on AMR on the sides of UNGA in September 2024:

- **Implementation of effective cross-sectoral coordination** - Members must implement multisectoral NAPs on AMR, clearly identifying and funding priority needs for every sector;
- **Resource surveillance systems** - National surveillance systems must be strengthened and institutionalised;
- **Prioritise prevention** - Members should aim at having defined animal vaccination strategies with a funded implementation plan by 2030;
- **Set adequate funding** - Sustainable and predictable sources of funding need to be established at national and global levels.

Discussion and recommendations

- The AMRWG discussed potential causes for a lack of progress in some areas since the 2016 political declaration – the pandemic was considered a potential cause due to a change in priorities, alongside a lack of funding and of political awareness about the need to cost and allocate funds for implementing NAPs, with less than 10% of the countries having funded NAPs.
- The AMRWG considered potential strategies to increase implementation, including cost-benefit analysis, integrated surveillance systems, regional strategies and characterisation of animal diseases and identification of relevant alternatives to antimicrobials. Production practices and genome editing were also mentioned as areas to explore with caution in reducing the need for antimicrobials in animals in the future.
- The AMRWG agreed to support the priorities presented by WOAHA.

3.3. Update on Monitoring & Evaluation (M&E) – Dr Javier Yugueros-Marcos

Work is undergoing to refine WOAHA's AMR Theory of Change indicators from 100 to 25 for more effective monitoring and evaluation. Proposed new indicators may include: 2/3 of members using VSAFE (Substandard and Falsified Veterinary Products project) by 2026, ANIMUSE being adopted by 90% of participants and, to bring 4-6 Members beyond data reporting to WOAHA e.g., publication of national reports of AMU data. A report will be presented on the new indicators at the AMRWG meeting in February/March 2025.

Discussion and recommendations

- The AMRWG asked if the current Theory of Change has been used so far to monitor work; Dr Yugueros-Marcos explained that it has not been properly used as an evaluation tool due to the excessive number of indicators. Efforts are currently focused on reducing the number of indicators to ensure the tool can be used as effectively as possible.

4. AMR & VP Dept updates I

4.1. AMR strategy & companion animals: Actions and deliverables for 2024 – Dr Javier Yugueros-Marcos

WOAHA has defined a specific roadmap on AMR in companion animals, based on WOAHA's AMR Strategy. The first phase of implementation, planned for 2024-2026, will have two main priorities. The first priority is to improve awareness and understanding among companion animal veterinarians and pet owners, in collaboration with key partner organisations such as the World Small Animal Veterinary Association (WSAVA). The second priority area is to strengthen knowledge through surveillance activities, leading ANIMUSE to become the global reference database for both AMR and AMU surveillance purposes in companion animals, as AMR in these species does not fall under the remit of FAO.

Discussion and recommendations

- The AMRWG discussed the importance of avoiding duplication in this area and opportunities to work with WSAVA. In response, the AMRWG was informed about WSAVA's regional meeting in Kenya on 19 March, which will be used to present the strategy to companion animal veterinarians and the opportunity to prepare something for the WSAVA Global Conference in September 2024, to be held in China.

4.2. WOAAH List recommendations- Resolution for General Session – Secretariat – Dr Ana Mateus

The AMRWG revised the proposal to update the WOAAH List of Antimicrobials of Veterinary Importance, following their discussion at the meeting held in October 2023, and their subsequent virtual work to modify the text as follows:

- Update the introductory text with some editorial changes such as the replacement of 'OIE' by 'WOAH', the specific mention of the AMRWG following its creation in 2019;
- Update the recommendations to align with the new categorisation criteria of the [WHO List of Medically Important Antimicrobials](#), that now include the [AWaRe classification](#) and the [WHO Essential Medicines List](#), which resulted in the move of phosphonic acid derivatives (e.g., fosfomycin) among Highest Priority Critically Important Antimicrobials (HPCIA);
- Maintain the categorisation list, as no update was considered necessary.

Discussion and recommendations

- The AMRWG discussed how standards would be applied to fosfomycin as it is mostly used in aquaculture for the mass treatment of bacterial diseases. Dr Mateus explained that this is covered by recommending that this antimicrobial is not used for prevention purposes, nor for growth promotion.
- The AMRWG discussed and agreed on a last modification in the recommendations section to better align with the definition of prevention from chapter 6.9 of the Terrestrial Animal Health Code (TAHC).
- The AMRWG approved all changes proposed to update the recommendations section of WOAAH's List of Antimicrobials of Veterinary Importance, recommending Director General to present it as a resolution for adoption during the upcoming 91st General Session. The revised List of Antimicrobials of Veterinary Importance, highlighting all changes, is available in the [Annex 3](#) of this meeting report.

4.3. ANIMUSE – AMU team

4.3.1. ANIMUSE report update – Dr Delfy Góchez

As of 21 February, ANIMUSE received 141 submissions in its 9th round of data collection. While the global participation is 77%, there are some challenges to obtain the data from Africa (participation rate 57%).

The preliminary results of the 8th AMU Report were presented with submissions from 152 WOAAH Members. The 2021 analysis was performed in 94 countries where tetracyclines remained the most used antimicrobials in animals, followed by penicillin. Analysis of data between 2019 to 2021 for 81 Members shows an overall increase of 2% in the mg/kg at the global level for this period. The ANIMUSE report is expected to be published early May 2024.

Discussion and recommendations

- The AMRWG discussed potential reasons behind the increase in the 8th report in AMU in Africa (mg/kg), with disease outbreaks and improved reporting in some countries considered as possible explanations. The impact the pandemic may have had to importing countries was also discussed, as it may have caused an artificial decrease of AMU due to trade restrictions and in turn, a spike when importing returned in 2021.
- WOAAH would like to empower its Members towards the institutionalisation of AMU data collection, analysis and reporting through a series of trainings on how to write national AMU reports. This will support and enable Members to support their decision-making process on AMR interventions and policies at national level.
- The AMRWG noted the reduction in participation from Africa, with participation down to 57% in the most recent round, with discussions around whether some countries do not feel that there is a direct benefit in them from participating.

4.3.2. Animal biomass – Dr Morgan Jeannin

Recent developments on the WOAAH Animal Biomass indicator used in ANIMUSE to analyse the AMU data consist of: a) the development of an updated World Animal Health Information System ([WAHIS](#)) annual report system in which the animal population information could be conveyed in a greater level of detail, enabling a refined calculation of the animal biomass and, b) the development of a dedicated animal biomass module within

ANIMUSE, to increase the automation of the calculation of this indicator based on the refined granularity of the WAHIS animal population data.

As agreed in the previous October 2023 AMRWG meeting, the AMRWG supported the creation of an electronic expert group (EEG) to provide technical input on the data collection (species level data) and analysis (refinement of animal biomass methodology). The terms of reference (ToR) were shared with the AMRWG for feedback.

Discussion and recommendations

- The AMRWG underlined the importance of the Animal Biomass indicator in interpreting the AMU data and appraised the refinement and consolidation of the calculation of this indicator.
- The AMRWG discussed mitigation strategies for the data gap between 2019-2022 (due to WAHIS IT development, animal population reporting was paused in 2019). It was agreed to use the available animal population figures of 2018, for which the most reliable and updated data is available, to fill in the data gap as an interim solution (with a possible risk of underestimating the animal biomass for these years).
- The AMRWG will send their feedback on the ToR to Dr Góchez.

5. Antimicrobial Stewardship (AMS) – integration into the WOAHA terrestrial and aquatic standards – Dr Stephen Page

There is no agreed universal definition of ‘antimicrobial stewardship’ in WOAHA’s standards. Multiple groups are developing definitions in isolation. However, there is desire to develop a global definition with a call to action for groups to work in unison and strengthen global veterinary systems.

Discussion and recommendations

- The AMRWG discussed the need for a universal definition and the difficulty with translating the term, acknowledging that despite the lack of a definition, its concept is included in [Chapter 6.10](#) of the Terrestrial Code and it is a widely used term internationally.
- The AMRWG concluded that it would be best to revisit the topic once Chapter 6.10 has been adopted with the hope that an intersectoral definition can be developed.

6. Vet AWaRe concept – Prof Michael Sharland and Prof Scott Weese

The AMRWG was informed about proposals to develop a veterinary counterpart to the WHO AWaRe list (VetAWaRe), by Professor Sharland and Professor Weese as below.

6.1. Human AWaRe – Prof Michael Sharland

The [WHO Essential Medicines List \(EML\)](#) was first created in 1977 and it has been reviewed multiple times since. In 2016 the WHO EML was reviewed to group antibiotics by infection as opposed to antibiotic group; 35 priority infections were identified. In 2017, the WHO EML Expert Committee approved the [AWaRe classification](#) of essential antibiotics as ‘Access’, ‘Watch’ or ‘Reserve’. In 2019, this was expanded to over 250 antibiotics and a new category of ‘not recommended’ was added. The 23rd EML was introduced in 2023, where 41 antibiotics were divided as follows– ‘Access’ - a core set of 20 antibiotics, ‘Watch’ - 12 antibiotics with a generally higher potential to drive bacterial resistance and ‘Reserve’ - 9 antibiotics authorised for use in humans only. This has since developed into a marked quality improvement system, with many countries using the [AWaRe app](#) as a reporting mechanism and the AWaRe system being adopted by countries at G7, G20, G77 amongst others.

Discussion

- The AMRWG asked if the adoption of the AWaRe classification system had led to any change in prescribing behaviour of antimicrobials, with Prof Sharland explaining that it is too early to ascertain its impact but clear targets are now being developed and used to measure AMU.

6.2. VetAWaRe – Prof Scott Weese

There is a need for a classification system that considers human, animal and environmental dimensions of AMR/U for the animal sector. VetAWaRe could complement and expand the WHO AWaRe list, using a similar framework that could be repeated for different animal species.

Discussion and recommendations

- The AMRWG discussed other classifications currently used, including the four categories of antimicrobials used by the EU (Avoid, Restrict, Caution and Prudence) and whether there is a risk of overlap. Prof Weese confirmed that most categories currently used are similar and all existing rankings would be considered rather than trying to create new categories in the VetAWaRe List.
- Prof Weese and Prof Sharland confirmed that there are no regional variations in the [AWaRe antibiotic book](#), except for one infectious disease for which there is specific guidance. When considering VetAWaRe, there may be regional differences with access categories for animals.
- The AMRWG discussed if WOAAH was to adopt this approach which species should be tackled first, with suggestions that companion animals (dogs and cats) and at least one species of food-producing animals could be a starting point.
- The AMRWG will continue to explore next steps in upcoming meetings to inform further revision of the categorisation of antimicrobials within the WOAAH list of antimicrobials of veterinary importance in the near future.

7. AMR & VP Dept updates II

7.1. Substandard and Falsified Veterinary Products project (SFVP) – Dr Andrés Garcia Campos

The SFVP project has five pillars: a global notification and alert system (VSAFE), development of guidelines, establishment of laboratory networks, field level data collection and awareness. Data from phase 2 of the VSAFE pilot were presented to the AMRWG, who was also informed about the specifications identified so far for the development of an IT system, based on feedback from Members. An EEG for developing guidance documents on SFVP will be established in Q2 2024. Regular interactions with Interpol, [WCO](#)⁴ and WHO have further strengthened WOAAH's collaboration with these organisations. WOAAH participated in the WHO workshop in Asia for presenting WOAAH's SFVP activities using a One Health focus. This experience will inform WOAAH's first SFVP workshop for Asia & Pacific region from 12-14 June 2024 in Bangkok (Thailand).

Discussion and recommendations

- The AMRWG was asked to provide guidance on the mechanism that should be used to further engage with WOAAH Members in the VSAFE system. The AMRWG recommended either a resolution, or further revision in Article 3.4.11.5. in Chapter 3.4. 'Veterinary Legislation'. The AMRWG agreed that a resolution would be probably the best approach.
- The AMRWG considered the pilot results, industry interest, the possibility of introducing registration for drugs, the scale of the problem and the drivers for falsification in veterinary versus human medicines to tackle the issue. Further exploration of the issue may be helpful in the future.

7.2. Workplan on AMR in Aquaculture activities – Dr Dante Mateo

The drafted e-learning module 'Stewardship on AMR in aquatic animals (Day 2)', is comprised of five units and developed by a scientific consortium. The module requires extensive revision of its technical content and formatting of the text, tables and illustrations. Despite desire to have global aquaculture scope, the module tends to be focused on European fish culture, which limits its usefulness. Improvement is expected for the second review.

The EEG drafted all five chapters of the Guideline for AMU monitoring in aquaculture at field level, which has received feedback from the EEG chair and the Secretariat. After revision it will be sent for external review to nine experts - their feedback is expected after six weeks (April 2024).

Discussion and recommendations

- The AMRWG noted that 'stewardship' was used in this presentation and discussed the origin of the term, concluding that it most likely originated from the human sector and is also widely used by WOAAH's Collaborating Centres.

8. AMRWG & *ad hoc* groups updates

8.1. *Ad hoc* group for the development of the Technical Reference Document (TRD) listing Antimicrobials of Veterinary Importance for bovine animals – Dr Ana Mateus

The *ad hoc* group has met twice virtually since October 2023 and has completed the table of antimicrobials used in bovine animals and the list of common pathogens and diseases commonly treated with antimicrobials. The *ad hoc* group

⁴ WCO- World Customs Organization

is currently developing the matrix of infectious diseases treated with antimicrobials and will start developing the Technical Reference Document (TRD) in March 2024. The TRD will be circulated to external experts and relevant stakeholders and organisations on Q2 2024. The preliminary exercise conducted by the *ad hoc* group concerning categorisation criteria for antimicrobials to inform the future revision of WOAH's List was also presented for consideration of the AMRWG.

Discussion and recommendations

- The AMRWG agreed that they will review the TRD before it goes for external consultation.
- The AMRWG will further discuss the hypothetical categorisation exercise in the October 2024 meeting.
- The AMRWG recommended to make previously published TRDs more visible in WOAH's website, and not only by accessing AMRWG meeting reports where those were approved.

8.2. *Ad hoc* group for the development of the Technical Reference Document (TRD) listing Antimicrobials of Veterinary Importance for cats and dogs – Dr Stephen Page

The *ad hoc* group met virtually in November 2023 with the next meeting due to take place on 4th April 2024. The *ad hoc* group is working to complete the components of the TRD. The list of pathogens and diseases, which is potentially complex given the regional nature of many disease agents, is being refined. The list of antibacterial agents is extensive for these species with several antimicrobial agents having been identified that were not previously included in the WOAH List. A new categorisation approach and importance rating scheme is being cross checked against the recent WHO MIA list of 2024; this categorisation exercise will inform the future revision of the WOAH list in the near future. The TRD is expected to be drafted in April for circulation to external experts and others within Q2 2024.

Discussion and recommendations

- The AMRWG was consulted on including off-label use in the TRD and suggested it could be included as an annex of the TRD and that consideration should be given to include some recommendations for off-label use.
- The AMRWG discussed potential opportunities to survey Members on how they use the TRDs and the WOAH list of Antimicrobials of Veterinary Importance.
- The AMRWG considered that the TRD may be modified in future, to be aligned to the AWaRe list, to become more of a risk management tool.
- The AMRWG agreed that they will review the TRD before it goes for external consultation.
- The AMRWG will further discuss the hypothetical categorisation exercise in the October 2024 meeting.

9. Updates from other departments

9.1. Revision of chapter 2.1.1. of the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals – BSC Secretariat – Dr Mariana Delgado

The AMRWG was briefed on the progress of the revision of [Chapter 2.1.1.](#) of the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

In their September 2023 meeting, the Biological Standards Commission (BSC) was requested to evaluate whether the chapter provided current and comprehensive information on establishing clinical breakpoints and if a revision was necessary. The BSC approached the AMRWG for their expertise, and the AMRWG recommended that the CCs relevant to this topic should conduct a review of this chapter. Consequently, three CCs contributed an 'update map', outlining necessary updates. In February 2024, the BSC evaluated this map and concurred with the proposed changes.

Subsequently, the AMRWG was presented with the revision map suggested by the CCs. The CCs have been instructed to execute their mapping update plan and submit the revised chapter to the BSC for its September 2024 meeting, with the goal of proposing the chapter for adoption in May 2025.

Discussion and recommendations

- The AMRWG expressed appreciation for the CCs' efforts and agreed with the proposed revision outline. They specifically endorsed the modifications and additions to sections 5.1 Phenotypic Susceptibility Testing Methods and notably, 5.2 Genotypic Susceptibility Testing Methods, as comprehensively outlined by the CCs. The decision to

remove section 5.4. Future Directions in Antimicrobial Susceptibility/Resistance, covered in the preceding sections, was also supported.

- The AMRWG advised that regulation of commercial AST needs to be referenced and that routine testing quality control should be mandatory. This can be done either in the Quality Control chapter or under disease specific chapters of the Terrestrial Manual. The BSC Secretariat will follow up with the CCs and explore on how to include the information on regulation of commercial AST in the revised chapter.
- The European Medicines Agency (EMA) has funds to commission research and is looking to establish clinical breakpoints that are necessary for veterinary antimicrobials which will be available in the next year or two.

9.2. Biosecurity (new chapter in Terrestrial Animal Health Code) – Standards Dept – Dr Francisco D'Alessio

The first draft of the Biosecurity Chapter 4.xx has been circulated and the first round of comments were received from Members in September 2024. The Chapter will be a general chapter defining how to approach biosecurity; if specific context is needed, this can be included in the relevant specific chapters.

Discussion and recommendations

- The AMRWG discussed the inclusion of companion animals in the chapter with Dr D'Alessio confirming that the overarching principles should be applicable to all species, with relevant content included where applicable.
- The AMRWG agreed that they are happy to contribute to this work and after discussing ways of working, and that the AMRWG and TCC can work collaboratively. Once feedback has been received from the TCC, the AMRWG can begin discussions with them on the Chapter.

TAHC Chapter 6.10. – revision of feedback by country Members and workplan for revision of upcoming TAHC chapters to inform the Terrestrial Code Commission – Dr Ana Mateus

Revision of [Chapter 6.10](#) started in December 2021; the most recent round of comments from Members was received in December 2023 for consideration of the Terrestrial Code Commission (TCC). The TCC discussed the revised Chapter 6.10 in February 2024, taking into consideration the comments received from Members. The TCC recommended that Chapter 6.10 should be proposed for adoption at the General Session in May 2024, alongside other amendments to the TAHC.

The AMRWG has been requested by the TCC to suggest which chapters should be revised after Chapter 6.10.

Discussion and recommendations

- The AMRWG recommended that chapters [6.7](#) and [6.8](#) as the next chapters to be revised.
- The AMRWG also considers that chapters in the Aquatic Animal Health Code deserve urgent attention for update.
- The Secretariat will carry out a mapping exercise on surveillance programs to inform further discussions by AMRWG on revision process of Chapter 6.8 at the October 2024 meeting.
- CCs will be contacted by the Secretariat to gather their views on inclusion of companion animals and what aspects should be covered in the chapter revisions.

10. WG AMR I – Chair/ Secretariat

10.1. Brainstorming session: Alternatives to antimicrobials (AMRWG only) – Dr Ana Mateus

A mapping exercise on relevant WOA standards and texts related to autogenous vaccines was presented by Dr Mateus to the AMRWG. The AMRWG were consulted on the possibility of developing standards or guidelines on autogenous vaccines, following [recommendation number eight](#) from the second global conference on AMR held in 2018, in Marrakesh.

An overview was provided by Ms Barbara Freischem of the EU's [2019/6 regulation](#) on veterinary medicinal products and EMA's role in helping to implement the legislative requirements. The 2019/6 legislation covers autogenous vaccines, innovation incentives, and specific provisions for vaccines, novel therapies and antimicrobials. Furthermore, Ms Freischem shared [EMA's scientific guideline for promoting the authorization of alternatives to antimicrobial veterinary products](#) and the [CVMP strategy on antimicrobials 2021-2025](#) for information. Harmonisation of requirements for

autogenous vaccines is currently being conducted at European level; a report on autogenous vaccines is to be published by EMA in January 2025.

An overview was provided by Dr Donald Prater of the USA's regulatory approach to antimicrobials, including the bodies responsible for their regulation (FDA⁵ Centre for Veterinary Medicine and USDA⁶'s Animal Plant Health and Inspection Service), regulatory and marketing considerations alternatives to antimicrobials and ways in which the USA is incentivising their use, including user fee reductions.

Discussion and recommendations

- The AMRWG recognised that despite the decrease in interest on autogenous vaccines since 2015, this is still an area of importance. Considering the vaccine expertise across WOAAH, the AMRWG noted that this could be an opportunity for an interdisciplinary workstream across the organisation, where the AMRWG could be responsible for the component that is likely to reduce AMU.
- The AMRWG discussed the risk of AMR being transferred by the use of autogenous vaccines and the lack of knowledge on their efficacy. The AMRWG agreed that standards or guiding principles would be required on autogenous vaccines to prevent an increase in AMR.
- The AMRWG recommended to write a reflection paper on autogenous vaccines, leveraging the expertise sitting in WOAAH's CCs on Veterinary Medicinal Products.
- With regards to alternatives to antimicrobials, the AMRWG recommended to explore writing a piece of work in one of WOAAH's publications, to encourage Members' opinions on the topic.

10.2. Roadmap 2024-2025 – Secretariat

The AMRWG revised the progress of its roadmap and updated it according to meeting discussions. This roadmap has been revisited to a new format and will be available for Members in the AMRWG website.

11. Any other business

11.1. Systematic review of evidence on use of antimicrobials as growth promoters – Ms Floriane Etienne

Ms Etienne (intern at AMR & VP department) provided an overview of the ongoing systematic review she is conducting focused on assessing impact of use of antimicrobials as growth promoters on AMR. A report with the main findings and recommendations of this review is expected in July-August 2024; the AMRWG is welcome to provide feedback once it is available.

12. Date of next meeting

The next AMRWG meeting will take place from 29 to 31 October 2024.

Closure.

.../Annexes

⁵ FDA- Food and Drug Administration

⁶ USDA- United States Department of Agriculture

Annex 1. Adopted Agenda

MEETING OF THE WOAHP WORKING GROUP ON ANTIMICROBIAL RESISTANCE

Paris, 27–29 February 2024

Day 1 (Tuesday 27 February– 09:00-17:00 CET)

09:00-09:20	<ul style="list-style-type: none">• Welcome and opening of meeting• Adoption of the agenda• Appointment of rapporteur
09:20-11:00	Landscape I <ul style="list-style-type: none">• FAO InFARM and RENOFARM- Alejandro Dorado Garcia• WHO Medically Important Antimicrobials (MIA) List and other AMR activities- Jorge Matheu• Update on the activities of the Therapeutic Guidelines Group of the World Small Animal Veterinary Association (WSAVA TGG)- Stephen Page
11:00-11:15	Coffee break
11:15-13:00	Landscape II <ul style="list-style-type: none">• Quadripartite overview of work on AMR- Holy Akwar• UNGA 2024- concept note update – Javier Yugueros-Marcos• Update on Monitoring & Evaluation (M&E)- Javier Yugueros-Marcos & Ben Davies
13:00-14:15	Lunch break
14:15-15:30	<p>* Formal welcome AMRWG and observers- Dr Monique Eloit (WOAH DG)*- 30'</p> AMR & VP Dept updates I <ul style="list-style-type: none">• Roadmap AMR Strategy & companion animals: actions and deliverables for 2024-2026 – Javier Yugueros-Marcos• Revised recommendations of WOAHP List of Antimicrobials of Veterinary Importance- Ana Mateus• ANIMUSE- AMU team<ul style="list-style-type: none">○ ANIMUSE report update○ Animal biomass
15:30- 15:45	Coffee break
15:45-17:30	<ul style="list-style-type: none">• Antimicrobial Stewardship (AMS) - integration into the WOAHP terrestrial and aquatic standards – Stephen Page• Vet AWaRe concept- Michael Sharland, Scott Weese
19:30-22:00	Dinner

Day 2 (Wednesday 28 February – 09:00-17:00 CET)

09:00-10:30	AMR & VP Dept updates II <ul style="list-style-type: none">• Substandard and Falsified Veterinary Products project- Javier Yugueros-Marcos, on behalf of Andrés Garcia Campos• Workplan on AMR in Aquaculture activities- Dante Mateo
10:30-10:45	Coffee break
10:45-13:00	AMRWG & <i>ad hoc</i> groups updates <ul style="list-style-type: none">• <i>Ad hoc</i> groups for the development of the Technical Reference Documents listing Antimicrobials of Veterinary Importance for bovine animals Ana Mateus

	<ul style="list-style-type: none"> • <i>Ad hoc</i> groups for the development of the Technical Reference Documents listing Antimicrobials of Veterinary Importance for cats and dogs - Stephen Page <p>Updates from other departments</p> <ul style="list-style-type: none"> • Revision of chapter 2.1.1. of the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals- BSC Secretariat- Mariana Delgado • Biosecurity (new chapter Terrestrial Animal Health Code)- Standards Secretariat
13:00-14:15	Lunch break
14.15-17.00	<p>AMRWG only:</p> <ul style="list-style-type: none"> • TAHC Chapter 6.10.- revision of feedback by country Members and workplan for revision of upcoming TAHC chapters to inform Code Commission- Secretariat- Ana Mateus

Day 3 (Thursday 29 February – 09:00-13:00 CET)- AMRWG only

09:00-13:00	<p>WG AMR I- Chair/ Secretariat</p> <ul style="list-style-type: none"> ▪ Brainstorming session: Alternatives to antimicrobials – All ▪ EMA perspective- Barbara Freischem ▪ FDA perspective- Don Prater <ul style="list-style-type: none"> • Roadmap 2024-2025 – Secretariat • WOAH General Session 2024- AMRWG report and presentation in plenary- Secretariat • AOB <ul style="list-style-type: none"> • Systematic review on antimicrobial growth promoters- Floriane Etienne • Date of next meeting • Closure
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Annex 2. List of Participants

MEETING OF THE WOAHP WORKING GROUP ON ANTIMICROBIAL RESISTANCE

Paris, 27–29 February 2024

MEMBERS

Dr Tomoko Ishibashi
(Chair)
Project Researcher
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Agricultural and Life
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The University of Tokyo
Tokyo, JAPAN

Ms Barbara Freischem
AMR Senior Specialist
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European Medicines Agency
Amsterdam, THE
NETHERLANDS

Dr Donald Prater
(Rapporteur)
Acting Director
Centre for Food Safety
and Applied Nutrition
(CFSAN)
Washington DC,
UNITED STATES OF
AMERICA

**Dr Fajur Sabah Al
Saloom**
Director, Animal Health
Ministry of Works,
Municipalities Affairs and
Urban Planning
Manama, KINGDOM OF
BAHRAIN

OBSERVERS

Dr Stephen Page
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Dr Alejandro Dorado Garcia
Animal Health Officer
AMR surveillance
coordination
One Health & Disease
Control Group
FAO- Food and Agriculture
Organization of the United
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Rome, ITALY

Dr Jorge Matheu
Team Lead
Department of Global
Coordination and
Partnership
WHO – World Health
Organization
Geneva,
SWITZERLAND

WOAH PARTICIPANTS

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Head of Department
Antimicrobial Resistance and
Veterinary Products Department
(AMR-VP)

Dr Morgan Jeannin
Chargé de mission
AMR-VP Department

Dr Ana Luisa Pereira Mateus
Scientific Coordinator
AMR-VP Department

Dr Holy Teneg Akwar
Deputy Head of AMR-VP
Department

Mr Mduduzi Welcome Magongo
Business Project Manager
AMR-VP Department

Dr Mariá Szabó
Scientific Coordinator
AMR-VP Department

Dr Andrés Garcia Campos
Project Officer
AMR-VP Department

Dr Dante Mateo
Scientific Coordinator
AMR-VP Department

Ms Laura Davis
Scientific Coordinator
International Standards

Dr Delfy Góchez
Data Management Officer - AMU
AMR-VP Department

Dr Mariana Delgado
Scientific Secretariat Officer
Science Department

Dr Francisco D'Alessio
Deputy Head
Standards Department

Ms Floriane Etienne
Intern
AMR-VP Department

Annex 3. Revised recommendations of WOAH List of Antimicrobials of Veterinary Importance

MEETING OF THE WOAH WORKING GROUP ON ANTIMICROBIAL RESISTANCE

Paris, 27–29 February 2024

OIE WOAH LIST OF ANTIMICROBIAL AGENTS OF VETERINARY IMPORTANCE (June 2024 [Month] [YEAR])

The **OIE WOAH**¹ International Committee unanimously adopted the List of Antimicrobial Agents of Veterinary Importance at its 75th General Session in May 2007 ([Resolution No. XXVIII](#)).

Background

Antimicrobial agents are essential drugs for human and animal health and welfare. Antimicrobial resistance is a global public and animal health concern that is influenced by both human and non-human antimicrobial usage. The human, animal and plant sectors have a shared responsibility to prevent or minimise antimicrobial resistance selection pressures on both human and non-human pathogens and reduce to the extent possible the spillover of antimicrobial resistance into the environment.

The FAO²/OIE/WHO³ Expert Workshop on Non-Human Antimicrobial Usage and Antimicrobial Resistance held in Geneva, Switzerland, in December 2003 (Scientific Assessment) and in Oslo, Norway, in March 2004 (Management Options) recommended that **the OIE WOAH** should develop a list of critically important antimicrobial agents in veterinary medicine and that WHO should also develop such a list of critically important antimicrobial agents in human medicine.

Conclusion No. 5 of the Oslo Workshop is as follows:

5. The concept of “critically important” classes of antimicrobials for humans should be pursued by WHO. The Workshop concluded that antimicrobials that are critically important in veterinary medicine should be identified, to complement the identification of such antimicrobials used in human medicine. Criteria for identification of these antimicrobials of critical importance in animals should be established and listed by OIE. The overlap of critical lists for human and veterinary medicine can provide further information, allowing an appropriate balance to be struck between animal health needs and public health considerations.

Responding to this recommendation, **the OIE WOAH** decided to address this task through its existing *ad hoc* Group on antimicrobial resistance. The terms of reference, aim of the list and methodology were discussed by the *ad hoc* Group since November 2004 and were subsequently endorsed by the Biological Standards Commission in its January 2005 meeting and adopted by the International Committee in May 2005. Thus, the work was officially undertaken by **the OIE WOAH**.

Scope

The **OIE WOAH** List of Antimicrobial Agents of Veterinary Importance:

- Addresses antimicrobial agents authorised for use in food-producing animals
- Does not include antimicrobial classes/sub classes only used in human medicine
- Does not include antimicrobial agents only used as growth-promoters
- Focuses currently on antibacterials and other important antimicrobials agents used in veterinary medicine

¹ **OIE: World Organisation for Animal Health. World Organisation for Animal Health (founded as OIE).**

² FAO: Food and Agriculture Organization of the United Nations

³ WHO: World Health Organization

Preparation of the draft list

The Director General of [the OIE WOA](#)H sent a questionnaire prepared by the *ad hoc* Group accompanied by a letter explaining the importance of the task to [OIE WOA](#)H Delegates of all Member Countries and international organisations having signed a Co-operation Agreement with [the OIE WOA](#)H in August 2005.

Sixty-six replies were received. This response rate highlights the importance given by [OIE WOA](#)H Member Countries from all regions to this issue. These replies were analysed first by [the OIE's WOA](#)H's Collaborating Centre for [Veterinary Medicinal Products](#)⁴, then discussed by the *ad hoc* Group at its meeting in February 2006. A list of proposed antimicrobial agents of veterinary importance was compiled together with an executive summary. This list was endorsed by the Biological Standards Commission and circulated among Member Countries aiming for adoption by [the OIE WOA](#)H International Committee during the General Session in May 2006.

Discussion at the 74th International Committee in May 2006

The list was submitted to the 74th International Committee where active discussion was made among Member Countries. Concerns raised by Member Countries include: 1) the list includes substances that are banned in some countries; 2) some of the substances on the list are not considered "critical"; 3) nature of the list – is this mandatory for Member Countries?; and 4) the use of antimicrobial agents as growth promotor is included. While many Member Countries appreciated the work, it was considered appropriate to continue refinement of the list. The list was adopted as a preliminary list by [Resolution No. XXXIII](#).

Refinement and adoption of the List of antimicrobial agents of Veterinary Importance

The *ad hoc* Group was convened in September 2006 to review the comments made at the 74th General Session of [the OIE WOA](#)H International Committee, and [Resolution No. XXXIII](#) adopted at the 74th General Session. Based on the further analysis provided by [the OIE WOA](#)H Collaborating Centre for Veterinary Medicinal Products, the *ad hoc* Group prepared its final recommendations of the List of antimicrobial agents of veterinary importance together with an executive summary. Once again, this was examined and endorsed by the Biological Standards Commission in its January 2007 meeting and circulated among Member Countries. The refined List was submitted to the 75th International Committee during the General Session in May 2007 and adopted unanimously by [Resolution No. XXVIII](#).

This list was further updated and adopted in May 2013, May 2015 and May 2018 by the World Assembly of [OIE WOA](#)H Delegates.

In July 2018, the *ad hoc* Group conducted a technical review of the List to improve coherence between the WHO and [OIE WOA](#)H List with respect to terminology used for antimicrobial classification, and this revision was endorsed by the Scientific Commission in February 2019. The report of the Scientific Commission to the [OIE WOA](#)H World Assembly of Delegates is detailed in the 86th General Session Final Report.

⁴ [French Agency for Food, Environmental and Occupational Health & Safety \(ANSES\) & French Agency for Veterinary Medicinal Products \(ANMV\), Fougères, France](#)

CRITERIA USED FOR CATEGORISATION OF VETERINARY IMPORTANT ANTIMICROBIAL AGENTS

In developing the list, the *ad hoc* Group agreed that any antimicrobial agent authorised for use in veterinary medicine according to the criteria of quality, safety and efficacy as defined in the *Terrestrial Animal Health Code* (Chapter 6.10 Responsible and prudent use of antimicrobial agents in veterinary medicine) is important. Therefore, based on OIE WOAH Member Country contributions, the Group decided to address all antimicrobial agents used in food-producing animals to provide a comprehensive list, divided into critically important, highly important and important antimicrobial agents.

In selecting the criteria to define veterinary important antimicrobial agents, one significant difference between the use of antimicrobial agents in humans and animals has to be accounted for: the many different species that have to be treated in veterinary medicine.

The following criteria were selected to determine the degree of importance for classes of veterinary antimicrobial agents.

Criterion 1. Response rate to the questionnaire regarding Veterinary Important Antimicrobial Agents

This criterion was met when a majority of the respondents (more than 50%) identified the importance of the antimicrobial class in their response to the questionnaire.

Criterion 2. Treatment of serious animal disease and availability of alternative antimicrobial agents

This criterion was met when compounds within the class were identified as essential against specific infections and there was a lack of sufficient therapeutic alternatives.

On the basis of these criteria, the following categories were established:

- Veterinary **Critically Important Antimicrobial Agents (VCIA)**: are those that meet **BOTH** criteria 1 **AND** 2
- Veterinary **Highly Important Antimicrobial Agents (VHIA)**: are those that meet criteria 1 **OR** 2
- Veterinary **Important Antimicrobial Agents (VIA)**: are those that meet **NEITHER** criteria 1 **OR** 2

Revision of the list of antimicrobial agents of Veterinary Importance

2007

The Joint FAO/WHO/OIE Expert Meeting on Critically Important Antimicrobials held in Rome, Italy, in November 2007, recommended that the list of antimicrobial agents of Veterinary Importance should be revised on a regular basis and that the OIE WOAH further refine the categorisation of antimicrobial agents, with respect to their importance in the treatment of specific animal diseases.

2012

The OIE WOAH *ad hoc* Group on Antimicrobial Resistance met in July 2012 to review and update the OIE WOAH List of antimicrobial agents of veterinary importance (OIE List) taking into account ~~the top three changes in the categorisation of~~ critically important antimicrobial agents of the WHO list of Critically Important Antimicrobials for Human Medicine.

2018

The OIE WOAH *ad hoc* Group on Antimicrobial Resistance met in January 2018 to review and update the OIE WOAH list taking into account:

- the Global Action Plan on Antimicrobial Resistance supporting the phasing out of use of antibiotics for animal growth promotion in the absence of risk analysis;
- the [Resolution N°38](#) adopted by the OIE WOAH World Assembly of Delegates in May 2017;
- the fifth revision of the WHO list of Critically Important Antimicrobials for Human Medicine (2016) moving Colistin among the Highest Priority Critically Important Antimicrobials; and
- the OIE WOAH report on antimicrobial agents intended for use in animals (Second Report), in particular the antimicrobial agents used as growth promoters (English version, page 30, figure 5)

The *ad hoc* Group made recommendations for the use of the updated OIE WOAH list.

2019

The Director General established the Working Group on Antimicrobial Resistance following the adoption of [Resolution No. 14](#) at the 87th WOAHA General Session. The Working Group replaced the *ad hoc* group on Antimicrobial Resistance to:

- ensure the sustainability of WOAHA's [Strategy on Antimicrobial Resistance and Prudent Use](#)
- implement the [recommendations](#) made during WOAHA's 2nd Global Conference on Antimicrobial Resistance.

2021

Editorial changes in the list were made public at the 2021 General Session. These changes addressed the incorrect spelling of some antimicrobial agents and an out-of-date reference to Chapter 6.9, which was updated to Chapter 6.10.

2024

The Working Group on Antimicrobial Resistance revised the recommendations section of the WOAHA List and endorsed it during its biannual meeting in February 2024. The Working Group took into account during the revision the new categorisation criteria of the [WHO List of Medically Important Antimicrobials](#) that now include the [AWaRe classification](#) and the [WHO Essential Medicines List](#), which resulted in the move of phosphonic acid derivatives (e.g., Fosfomycin) among Highest Priority Critically Important Antimicrobials (HPCIA).

The [Working Group on Antimicrobial Resistance](#) made recommendations for the use of the updated [OIE WOAHA](#) List

Recommendations

Any use of antimicrobial agents in animals should be in accordance with the [OIE WOAHA](#) Standards on the responsible and prudent use laid down in ~~the~~ Chapter [6.9. 6.10](#) of the *Terrestrial Animal Health Code* and in the Chapter 6.3. of the *Aquatic Animal Health Code*.

The responsible and prudent use of antimicrobial agents does not include the use of antimicrobial agents for growth promotion in the absence of risk analysis.

According to the criteria detailed above, antimicrobial agents in the [OIE WOAHA](#) List are classified according to three categories, Veterinary Critically Important Antimicrobial Agents (VCIA), Veterinary Highly Important Antimicrobial Agents (VHIA) and Veterinary Important Antimicrobial Agents (VIA).

However, a specific antimicrobial/class or subclass may be considered as critically important for the treatment of a specific disease in a specific species (See specific comments in the following table of categorisation of veterinary important antimicrobial agents for food-producing animals).

For a number of antimicrobial agents, there are no or few alternatives for the treatment of ~~some specified~~ [specific disease\(s\)](#) in identified target species as it is indicated in the [specific related](#) comments in the [OIE WOAHA](#) List. In this context, particular attention should be paid to the use of VCIA and of specific VHIA.

~~Among the VCIA, in the OIE WOAHA List, some antimicrobial classes, subclasses and specific antimicrobial agents are considered to be Highest Priority Critically Important (HPCIA) by WHO both for human and animal health; this is currently the case for Fluoroquinolones, and for the third and fourth generation of Cephalosporins, Colistin (Polymyxin E) and Phosphonic acid derivatives (e.g., Fosfomycin). These two classes and Colistin has been moved in 2016 to the WHO category of Highest Priority Critically Important Antimicrobials. Therefore HPCIA, these two classes and Colistin should be used according to the following recommendations:~~

- ~~• Not to be used as preventive treatment applied by feed or water in the absence of clinical signs in the animal(s) to be treated;~~
- ~~• Not to be used for prevention in an individual or group of animals at risk of acquiring a specific infection or in a specific situation where infectious disease is likely to occur if the drug is not administered.~~
- Not to be used as a first line treatment unless justified, when used as a second line treatment, it should ideally be based on the results of bacteriological tests; and
- Extra-label/off label use should be limited and reserved for instances where no alternatives are available ~~and~~ [Such use should be](#) in agreement with the national legislation in force; and
- Urgently prohibit their use as growth promoters.

The classes in the WHO category of ~~Highest Priority Critically Important Antimicrobials~~ [HPCIA](#)s should be the highest priorities for countries in phasing out use of antimicrobial agents as growth promoters.

The ~~OIE~~ WOAH List of antimicrobial agents of veterinary importance is based on expert scientific opinion and will be regularly updated when new information becomes available.

Antimicrobial classes / sub classes used only in human medicine (e.g., carbapenems) are not included in ~~this OIE~~ the WOAH List. Recognising the need to preserve the effectiveness of ~~the these~~ antimicrobial agents in human medicine, careful consideration based on risk assessment and existing evidence should be given regarding their potential use (including extra-label/off-label use) ~~for~~ or authorisation for use in animals or both.

Abbreviations

Animal species in which ~~these~~ antimicrobial agents are used and categories of antimicrobials of veterinary importance are abbreviated as follows:

AVI:	Avian	EQU:	Equine	VCIA:	Veterinary Critically Important Antimicrobial Agents
API:	Bee	LEP:	Rabbit	VHIA:	Veterinary Highly Important Antimicrobial Agents
BOV:	Bovine	OVI:	Ovine	VIA:	Veterinary Important Antimicrobial Agents
CAP:	Caprine	PIS:	Fish		
CAM:	Camel	SUI:	Swine		

**CATEGORISATION OF VETERINARY IMPORTANT ANTIMICROBIAL AGENTS
FOR FOOD-PRODUCING ANIMALS**

ANTIMICROBIAL AGENTS (CLASS, SUB-CLASS, SUBSTANCE)	SPECIES	Specific comments	VCIA	VHIA	VIA
AMINOCUMARIN Novobiocin	AVI, BOV, CAP, OVI, PIS	Novobiocin is used in the local treatment of mastitis and in septicaemias in fish. This class is currently only used in animals.			X
AMINOCYCLITOL Spectinomycin	AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI	Used for respiratory infections in cattle and enteric infections in multiple species.	X		
AMINOGLYCOSIDES Dihydrostreptomycin Streptomycin	AVI, BOV, CAP, EQU, LEP, OVI, SUI API, AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI	The wide range of applications and the nature of the diseases treated make aminoglycosides extremely important for veterinary medicine.			
AMINOGLYCOSIDES + 2 DEOXYSTREPTAMINE Amikacin Apramycin Fortimycin Framycetin Gentamicin Kanamycin Neomycin Paromomycin Tobramycin	EQU AVI, BOV, LEP, OVI, SUI BOV, LEP, OVI, SUI BOV, CAP, OVI AVI, BOV, CAM, CAP, EQU, LEP, OVI, SUI AVI, BOV, EQU, PIS, SUI API, AVI, BOV, CAP, EQU, LEP, OVI, SUI AVI, BOV, CAP, OVI, LEP, SUI EQU	Aminoglycosides are of importance in septicaemias; digestive, respiratory and urinary diseases. Gentamicin is indicated for <i>Pseudomonas aeruginosa</i> infections with few alternatives. Apramycin and Fortimycin are currently only used in animals. Few economic alternatives are available.	X		
AMPHENICOLS Florfenicol Thiamphenicol	AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI AVI, BOV, CAP, OVI, PIS, SUI	The wide range of applications and the nature of the diseases treated make phenicols extremely important for veterinary medicine. This class is of particular importance in treating some fish diseases, in which there are currently no or very few treatment alternatives. This class also represents a useful alternative in respiratory infections of cattle, swine and poultry. This class, in particular florfenicol, is used to treat pasteurellosis in cattle and pigs.	X		
ANSAMYCIN – RIFAMYCINS Rifampicin Rifaximin	EQU BOV, CAP, EQU, LEP, OVI, SUI	This antimicrobial class is authorised only in a few countries and with a very limited number of indications (mastitis) and few alternatives. Rifampicin is essential in the treatment of <i>Rhodococcus equi</i> infections in foals. However it is only available in a few countries, resulting in an overall classification of VHIA.		X	
ARSENICAL Nitarstone	AVI, SUI	Arsenicals are used to control intestinal parasitic coccidiosis. (<i>Eimeria</i> spp.).			X

ANTIMICROBIAL AGENTS (CLASS, SUB-CLASS, SUBSTANCE)	SPECIES	Specific comments	VCIA	VHIA	VIA
Roxarsone	AVI, SUI				
BICYCLOMYCIN Bicozamycin	BOV, PIS, SUI	Bicyclomycin is listed for digestive and respiratory diseases in cattle and septicaemias in fish.			X
CEPHALOSPORINS					
CEPHALOSPORINS FIRST GENERATION Cefacetrile Cefalexin Cefalonium Cefalotin Cefapryin Cefazolin	BOV AVI, BOV, CAP, EQU, OVI, SUI BOV, CAP, OVI EQU BOV BOV, CAP, OVI	Cephalosporins are used in the treatment of septicaemias, respiratory infections, and mastitis.		X	
CEPHALOSPORINS SECOND GENERATION Cefuroxime	BOV				
CEPHALOSPORINS THIRD GENERATION Cefoperazone Ceftiofur Ceftriaxone	BOV, CAP, OVI AVI, BOV, CAP, EQU, LEP, OVI, SUI BOV, OVI, SUI	The wide range of applications and the nature of the diseases treated make cephalosporin third and fourth generation extremely important for veterinary medicine.	X		
CEPHALOSPORINS FOURTH GENERATION Cefquinome	BOV, CAP, EQU, LEP, OVI, SUI	Cephalosporins are used in the treatment of septicaemias, respiratory infections, and mastitis. Alternatives are limited in efficacy through either inadequate spectrum or presence of antimicrobial resistance.			
FUSIDANE Fusidic acid	BOV, EQU	Fusidic acid is used in the treatment of ophthalmic diseases in cattle and horses.			X
IONOPHORES Lasalocid Maduramycin Monensin Narasin Salinomycin Semduramicin	AVI, BOV, LEP, OVI AVI API, AVI, BOV, CAP AVI, BOV AVI, LEP, BOV, SUI AVI	Ionophores are essential for animal health because they are used to control intestinal parasitic coccidiosis (<i>Eimeria</i> spp.) where there are few or no alternatives available. Ionophores are critically important in poultry. <u>This class is currently only used in animals.</u>		X	
LINCOSAMIDES Lincomycin Pirlimycin	API, AVI, BOV, CAP, OVI, PIS, SUI BOV, SUI	Lincosamides are essential in the treatment of Mycoplasmal pneumonia, infectious arthritis and haemorrhagic enteritis of pigs.		X	
MACROLIDES					
MACROLIDES 14-MEMBERED RING Erythromycin Oleandomycin	API, AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI BOV	The wide range of applications and the nature of the diseases treated make macrolides extremely important for veterinary medicine. Macrolides are used to treat Mycoplasma infections in pigs and poultry, haemorrhagic digestive disease in pigs (<i>Lawsonia intracellularis</i>) and liver abscesses (<i>Fusobacterium necrophorum</i>) in	X		
MACROLIDES 15-MEMBERED RING Gamithromycin Tulathromycin	BOV BOV, SUI				

ANTIMICROBIAL AGENTS (CLASS, SUB-CLASS, SUBSTANCE)	SPECIES	Specific comments	VCIA	VHIA	VIA
MACROLIDES 16-MEMBERED RING		cattle, where they have very few alternatives.			
Carbomycin	AVI				
Josamycin	PIS, SUI				
Kitasamycin	AVI, SUI, PIS				
Mirosamycin	API, AVI, SUI, PIS				
Spiramycin	AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI				
Terdecamycin	SUI				
Tildipirosin	BOV, SUI				
Tilmicosin	AVI, BOV, CAP, LEP, OVI, SUI				
Tylosin	API, AVI, BOV, CAP, LEP, OVI, SUI				
Tylvalosin	AVI, SUI				
MACROLIDES C17					
Sedecamycin	SUI				
ORTHOSOMYCINS		Avilamycin is used for enteric diseases of poultry, swine and rabbit.			
Avilamycin	AVI, LEP, SUI	This class is currently only used in animals.			X
PENICILLINS					
NATURAL PENICILLINS (including esters and salts)					
Benethamine penicillin	BOV				
Benzylpenicillin	AVI, BOV, CAM, CAP, EQU, LEP, OVI, SUI				
Benzylpenicillin procaine / Benzathine penicillin	AVI, BOV, CAM, CAP, EQU, OVI, SUI				
Penethamate (hydroiodide)	BOV	Penethamate (hydroiodide) is currently only used in animals.			
AMDINOPENICILLINS					
Mecillinam	BOV, SUI				
AMINOPENICILLINS					
Amoxicillin	AVI, BOV, CAP, EQU, OVI, PIS, SUI				
Ampicillin	AVI, BOV, CAP, EQU, OVI, PIS, SUI				
Hetacillin	BOV				
AMINOPENICILLIN + BETA-LACTAMASE INHIBITOR					
Amoxicillin + Clavulanic Acid	AVI, BOV, CAP, EQU, OVI, SUI				
Ampicillin + Sulbactam	BOV, SUI				
CARBOXYPENICILLINS					
Ticarcillin	EQU				
Tobicillin	PIS				
UREIDOPENICILLIN					
Aspoxicillin	BOV, SUI				
PHENOXYPENICILLINS					
Phenethicillin	EQU				
Phenoxymethylpenicillin	AVI, SUI				
ANTISTAPHYLOCOCCAL PENICILLINS					
			X		

ANTIMICROBIAL AGENTS (CLASS, SUB-CLASS, SUBSTANCE)	SPECIES	Specific comments	VCIA	VHIA	VIA
Cloxacillin Dicloxacillin Nafcillin Oxacillin	BOV, CAP, EQU, OVI, SUI BOV, CAP, OVI, AVI, SUI BOV, CAP, OVI BOV, CAP, EQU, OVI, SUI				
PHOSPHONIC ACID DERIVATIVES Fosfomycin	AVI, BOV, PIS, SUI	Fosfomycin is essential for the treatment of some fish infections with few alternatives however it is only available in a few countries, resulting in an overall classification of VHIA.		X	
PLEUROMUTILINS Tiamulin Valnemulin	AVI, CAP, LEP, OVI, SUI SUI	The class of pleuromutilins is essential against respiratory infections in pigs and poultry. This class is also essential against swine dysentery (<i>Brachyspira hyodysenteriae</i>) however it is only available in a few countries, resulting in an overall classification of VHIA.		X	
POLYPEPTIDES Bacitracin Enramycin Gramicidin	AVI, BOV, LEP, SUI, OVI AVI, SUI EQU	Bacitracin is used in the treatment of necrotic enteritis in poultry. This class is used in the treatment of septicaemias, colibacillosis, salmonellosis, and urinary infections.		X	
POLYMYXINS Polymixin B Polymixin E (colistin)	BOV, CAP, EQU, LEP, OVI AVI, BOV, CAP, EQU, LEP, OVI, SUI	Polymyxin E (colistin) is used against Gram negative enteric infections.			
QUINOLONES					
QUINOLONES FIRST GENERATION Flumequin Miloxacin Nalidixic acid Oxolinic acid	AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI PIS BOV AVI, BOV, LEP, PIS, SUI, OVI	Quinolones of the 1st generations are used in the treatment of septicaemias and infections such as colibacillosis.		X	
QUINOLONES SECOND GENERATION (FLUOROQUINOLONES) Ciprofloxacin Danofloxacin Difloxacin Enrofloxacin Marbofloxacin Norfloxacin Ofloxacin Orbifloxacin Sarafloxacin	AVI, BOV, SUI BOV, CAP, LEP, OVI, SUI AVI, BOV, LEP, SUI AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI BOV, EQU, LEP, SUI AVI, BOV, CAP, LEP, OVI, SUI AVI, SUI BOV, SUI PIS	The wide range of applications and the nature of the diseases treated make fluoroquinolones extremely important for veterinary medicine. Fluoroquinolones are critically important in the treatment of septicaemias, respiratory and enteric diseases.	X		
QUINOXALINES Carbadox Olaquinox	SUI SUI	Quinoxalines (carbadox) is used for digestive disease of pigs (e.g. swine dysentery). This class is currently only used in animals.			X

ANTIMICROBIAL AGENTS (CLASS, SUB-CLASS, SUBSTANCE)	SPECIES	Specific comments	VCIA	VHIA	VIA
SULFONAMIDES Phthalylsulfathiazole Sulfacetamide Sulfachlorpyridazine Sulfadiazine Sulfadimethoxazole Sulfadimethoxine Sulfadimidine (Sulfamethazine, Sulfadimerazine) Sulfadoxine Sulfafurazole Sulfaguanidine Sulfamerazine Sulfamethoxine Sulfamonomethoxine Sulfanilamide Sulfapyridine Sulfaquinoxaline	SUI AVI, BOV, OVI AVI, BOV, SUI AVI, BOV, CAP, OVI, SUI AVI, BOV, SUI AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI AVI, BOV, CAP, EQU, LEP, OVI, SUI AVI, BOV, EQU, OVI, SUI BOV, PIS AVI, CAP, OVI AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI AVI, PIS, SUI AVI, PIS, SUI BOV, CAP, OVI BOV, SUI AVI, BOV, CAP, LEP, OVI	The wide range of applications and the nature of the diseases treated make sulfonamides extremely important for veterinary medicine. These classes alone or in combination are critically important in the treatment of a wide range of diseases (bacterial, coccidial and protozoal infections) in a wide range of animal species.	X		
SULFONAMIDES+ DIAMINOPYRIMIDINES Ormetoprim+ Sulfadimethoxine Sulfamethoxypyridazine Trimethoprim+ Sulfonamide	AVI, PIS AVI, BOV, EQU, SUI AVI, BOV, CAP, EQU, LEP, OVI, PIS, SUI				
DIAMINOPYRIMIDINES Baquiloprim Ormetoprim Trimethoprim	BOV, SUI AVI AVI, BOV, CAP, EQU, LEP, OVI, SUI				
STREPTOGRAMINS Virginiamycin	AVI, BOV, OVI, SUI	Virginiamycin is an important antimicrobial in the prevention of necrotic enteritis (<i>Clostridium perfringens</i>).			X
TETRACYCLINES Chlortetracycline Doxycycline Oxytetracycline Tetracycline	AVI, BOV, CAP, EQU, LEP, OVI, SUI AVI, BOV, CAM, CAP, EQU, LEP, OVI, PIS, SUI API, AVI, BOV, CAM, CAP, EQU, LEP, OVI, PIS, SUI API, AVI, BOV, CAM, CAP, EQU, LEP, OVI, PIS, SUI	The wide range of applications and the nature of the diseases treated make tetracyclines extremely important for veterinary medicine. This class is critically important in the treatment of many bacterial and chlamydial diseases in a wide range of animal species. This class is also critically important in the treatment of animals against heartwater (<i>Ehrlichia ruminantium</i>) and anaplasmosis (<i>Anaplasma marginale</i>) due to the lack of antimicrobial alternatives.	X		
THIOSTREPTON Nosiheptide	SUI	This class is currently used in the treatment of some dermatological conditions.			X