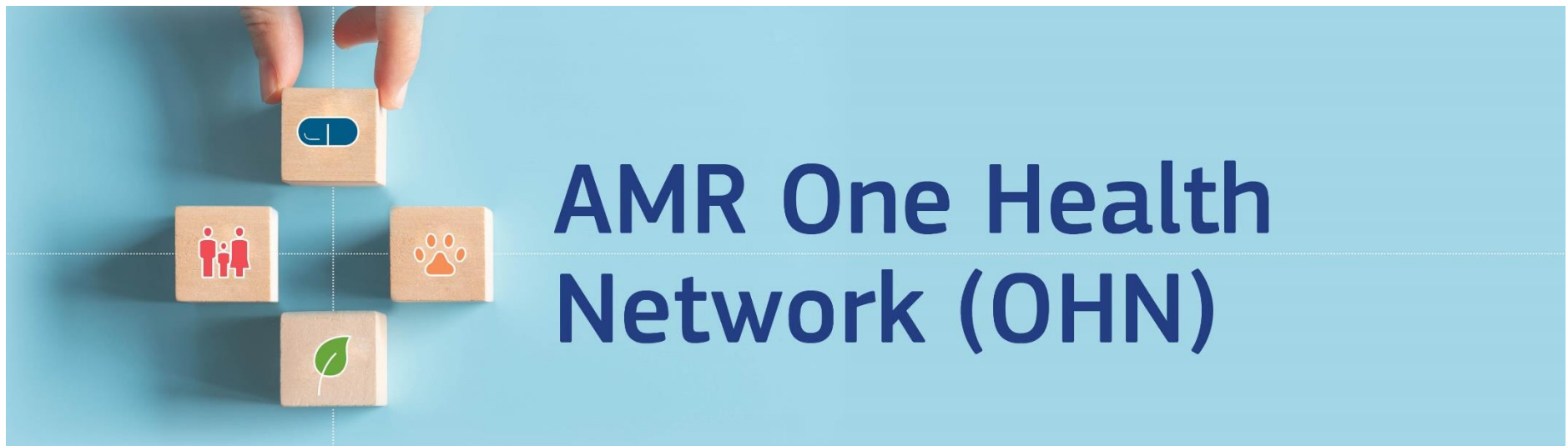**AMR OHN**
One Health Network

FINAL REPORT

SUBGROUP ESTABLISHED UNDER THE EU AMR ONE HEALTH NETWORK TO FORMULATE SUGGESTIONS FOR AMR ACTIONS

AUGUST 2022

AMR One Health Network (OHN)

OUTLINE

INTRODUCTION

The **AMR One Health Network** is an informal collaborative group coordinated by the European Commission that brings together human health, veterinary and environmental health experts from EU Member States, with the objective to improve the European Union (EU) efforts to fight against antimicrobial resistance (AMR).

During the AMR One Health Network meeting of January 2022, Commissioner for Health Stella Kyriakides announced a **new policy initiative on AMR from the European Commission** that will build on the implementation of the 2017 EU AMR Action Plan. By 2023, the Commission will adopt a proposal for Council Recommendations on AMR, and propose AMR provisions as part of the revision of the EU pharmaceutical legislation. Commissioner Kyriakides highlighted the need to take concrete coordinated actions in an integrated manner. The European Commission also decided to establish within the AMR One Health Network (OHN) a **temporary subgroup** with the objective to formulate suggestions from Member States to the European Commission in view of its new AMR policy initiative.

In this context, the French Presidency of the Council of the EU hosted a **One Health Ministerial Conference on AMR** in Paris on 07 March 2022.

1. SCOPE

The AMR OHN subgroup was tasked to **provide technical expertise and opinions from the EU 27 Member States** (MS), as a consultative step, to the Commission on needed concrete objectives and activities to strengthen EU and Member States action against antimicrobial resistance (AMR), in particular in the area of public health, animal health, plant health and the environment, taking into account the latest policy developments and the need to decrease antimicrobial resistance.

This consultative step among MS is one of the several elements based on which the Commission will develop its policy initiative. Other elements include inter alia: an AMR future proofing study, a Eurobarometer on AMR, work on AMR by the expert panel on effective ways of investing in health, the Commission review of Member States AMR One Health National Action Plans, recommendations from the 2018-2021 Joint Action on Antimicrobial Resistance and Healthcare-Associated Infections (EU-JAMRAI) and the new Joint Action launched in 2022, as well as relevant scientific opinions and reports of EFSA, EMA and ECDC.

2. OBJECTIVE

The objective of this MS subgroup was to develop conclusions summarising actions which MS experts identify as relevant to consider for the above-mentioned policy initiative. Such actions should be as specific and concrete as possible, and **focus on unmet needs and priority areas where the EU level can be an added value**, either via **actions undertaken at EU level or national actions undertaken in a coordinated manner within the EU.** The conclusions of the subgroup were adopted in August 2022.

WORKING METHOD

1. **SUBGROUP COMPOSITION**

All 27 EU Member States representatives of the AMR One Health Network were invited to participate in the subgroup. Member States are represented by experts of the public health, veterinary and environmental sectors. The Commission was invited as observer.

2. **STEERING COMMITTEE**

The subgroup was chaired by the French representatives of the EU AMR One Health Network. A Steering Committee composed of representatives from three Member States (**France, Spain and Sweden**) facilitated the work of the subgroup, prepared the discussions and reviewed the meeting documents as well as the draft prepared by the French representatives for the subgroup conclusions. The Steering Committee met during one hour every two weeks from end of February to early July 2022.

3. **PROPOSALS**

On 25 March 2022, all Member States were invited to formulate action proposals in the human, animal and/or environmental health sectors, if possible in a **"One Health" approach**. In order to make these proposals as specific and applicable as possible, MS were asked to use the "SMART" methodology (i.e. to devise proposals that are **Specific**, **Measurable**, **Attainable**, **Relevant** and **Time-bound**). Member States had until 15 April to send their proposals to the French representatives, who grouped and sorted them by sector. Overall, 19 out of 27 MS provided suggestions.

This document was then forwarded to the participating MS, who were given time to review their proposals, ask clarifying questions and answer comments on their suggestions. These exchanges were done through the French representatives to preserve the anonymity of the MS proposals.

All proposals were taken into account without being modified, except if the title and description were exactly similar, in which case they were merged. Each MS choice of applicable sectors was also respected. For example, if a Member State chose to consider its proposal as applicable to the human sector only, it was placed only in that sector.

4. QUESTIONNAIRE

Once the document containing all the MS proposals was approved, Member States were asked to grade each proposal by **priority level**, they had until the 29 May. They were given the following instructions:

Rate each proposition from 1 to 10:
- *1 = lowest level of priority*
- *10 = highest level of priority*

The "Rate" column must have only numbers in it.

Or Check the *CNR (Cannot Reply) column if:
- *You do not understand the proposition*
- *The proposition is not applicable*
- *You cannot reply*

If you check the CNR box, you do not have to rate the suggestion.

MS were reminded that all received proposals will be sent to the Commission, and that the objective of the rating survey was to **identify which actions Member States believe are most urgent to prioritize at the EU level.**

Representatives were also informed that only one answer per MS would be accepted, thus each MS has to coordinate internally between the human health, veterinary and environmental health sectors, in a "One Health" approach. The deadline for submitting replies was end of May 2022. On the whole, 22 out of 27 MS participated in the voting procedure.

5. METHODOLOGY FOR THE SURVEY AND THE PRESENTATION OF RESULTS

The results present the mean, the median, the distribution of replies, the number of "CNR" (cannot reply) as well as the missing data. All replies were compiled by the French team in an Excel© spreadsheet, with rows for each proposal, a column for each mean, median, distribution of replies, CNRs, missing data, number of replies received and the replies of each MS. All calculations were done thanks to Excel© formulas.

The "CNR" replies were not taken into account as "0". "CNR" indeed does not necessarily imply a lower degree of prioritisation of a proposal, as some Member States may have picked "CNR" for proposals that were outside their scope, not understood, or on which they could not reach an agreement. Therefore counting them as "0" could bias the results of the mean and the median.

The distribution presents how many times each grade was chosen in the replies, as illustrated in the example below.
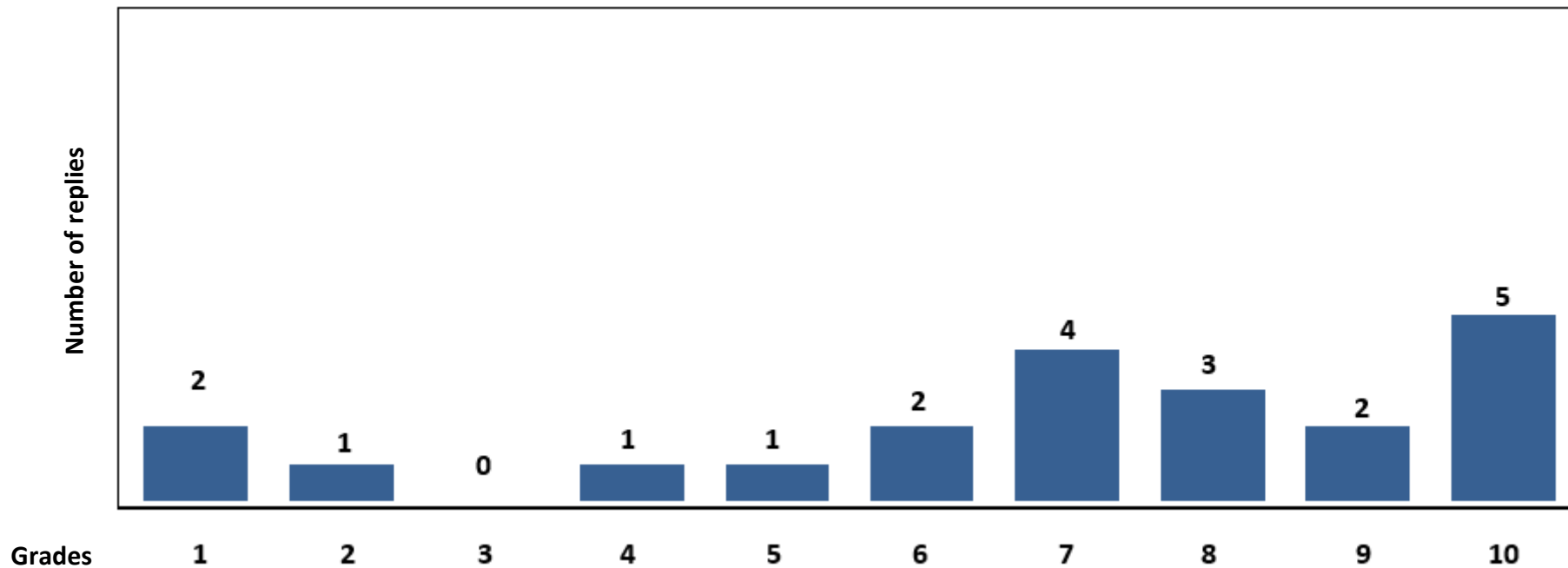
For the proposals classified as "Communication" and "One Health", i.e. the first 100 proposals, Member States were given the opportunity to precise for which sector they believed this proposal was "best applied to" among the human health, animal health and environmental health sectors. The calculation for these results were also completed using Excel©. If all three boxes were ticked, or if none were ticked, this was considered as a suggestion best applied in a "One Health" perspective.

To sort out where each proposal ranked, the SC decided to use the mean, as these data were more discriminating. The proposals were then colour coded according to where they rank, with chosen colours illustrated below. The choice of red for the Top 10% of proposals was made to highlight that these were considered the **most urgent to prioritize**.

The results are presented by sector, in the initial order they were voted on. Only the Top 10% of proposals are ranked in the following section. To sort out the Top 10% proposals, the means were used. To classify the proposals with the same mean, the number of replies and "CNR" were taken into account, as well as the distribution of replies. The results of the survey were shared with the subgroup in June 2022. Member States had the opportunity to provide comments should they wish to do so. The conclusions of the subgroup were then adopted in August 2022.

RESULTS

It is interesting to note that the recommended actions that ranked in the Top 10% of the means mostly relate to the veterinary sector. Indeed, 12 out of the 28 proposals target the veterinary sector, i.e. almost 43% of proposals. An additional 4 are classified as "Human & Animal Health" and 2 are considered "One Health". Therefore, 16 out of 28 proposals relate to animal health, which represent 57% of these proposals. There are 6 recommended actions in the environmental health sector and 4 classified as "Human Health".

Additionally, the Top 10% suggestions highlight four key categories of priorities. First, the need to **strengthen data collection and AMR surveillance systems** is mentioned in all sectors (7 proposals). Second, actions to **ensure the availability and accessibility of antimicrobials** are deemed priorities, including access to "old" narrow-spectrum antimicrobials and antimicrobials that lack commercial interest (6 proposals). Third, 7 proposals relate to the need to **develop guidelines, biosecurity measures and tools to help prevent the development and spread of infectious diseases in animals** and to support farmers in improving animal welfare as well as access diagnostic tools. Finally, 5 proposals are linked to the development of **EU guidelines and regulations to control (through a harmonised surveillance) and manage environmental pollution, notably from wastewater treatment plants and manufacturing sites**. This includes the idea to develop environmental monographs. The remaining 3 proposals relate to including environmental goals in National Action Plans, the update of dosage information on leaflets and postgraduate education of veterinary practitioners.

However, it is important to keep in mind that this analysis only takes into account the top 28 proposals. Member States indeed suggested a total of **287 proposals** to improve the EU action against AMR.

The following logos are used to identify the Top 10% suggestions by sector:

One Health   Human Health   Veterinary Sector   Human and Animal Health   Environment

273. PROVIDE EU GUIDELINES AND REGULATION REGARDING PRODUCTION OF PHARMACEUTICALS AND WASTEWATER MANAGEMENT (ENVIRONMENT)

Provide guidance and regulation for sustainable and clean production of antimicrobials both in- and outside the EU, including criteria for wastewater management to avoid antimicrobial production contributing to antimicrobial resistance in the environment.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.58	9.00		2	1	21

201. PREVENTING DEVELOPMENT AND SPREAD OF INFECTIOUS DISEASES *(VETERINARY SECTOR)*

Healthy animals to reduce the need for antibiotics, by improving biosecurity at farm level, by vaccine uptake, and by improved nutrition & breeding.

➔ Establish a subgroup to develop specific biosecurity measures to be implemented at farm level. These measures should be distributed to all Member States as a best practice catalogue;

➔ Implement specific biosafety measures in all holdings in EU to ensure healthy animals;

➔ Include selected biosecurity measures in EU legislation step by step to ensure that the measures are feasible for Member State despite their different production systems and types of holdings.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.50	8.50		2	0	22

28. ENSURE CONTINUED AVAILABILITY AND ACCESSIBILITY OF 'OLD', NARROW-SPECTRUM ANTIMICROBIALS *(ONE HEALTH)*

Support a stable supply chain of older, narrow-spectrum antimicrobials (such as penicillin and 1st generation cephalosporin) including pediatric formulations, e.g. by encouraging pharmaceutical industries to continue production, perhaps with private/public funding. Different types of penicillin and 1st generation cephalosporin are drugs recommended for treatment of major common bacterial infections. Many European countries have in recent years experienced shortages in delivery of these antimicrobials and some products are no longer available on the market. This makes it difficult to maintain the recommended use of narrow-spectrum antimicrobials and drives the usage towards a choice of broader-spectrum products, which contributes to maintaining a high level of AMR.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
8.41	**9.00**		One Health	8	**0**	**0**	**22**
			Human	10			
			Animal	12			
			Environment	0			

184. SURVEILLANCE OF ANTIBIOTIC RESISTANCE IN BACTERIAL PATHOGENS IMPORTANT FOR ANIMAL HEALTH *(VETERINARY SECTOR)*

Surveillance of antibiotic resistance in bacterial pathogens important for animal health in EARS-vet.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.25	**9.00**		**1**	**1**	**21**

247. WORK ON THE AVAILABILITY OF ANTIBIOTICS, BOTH FOR HUMAN AND ANIMALS, ESPECIALLY WHEN THERE IS A LACK OF COMMERCIAL INTEREST *(HUMAN AND ANIMAL HEALTH)*

EMA already has a proactive policy regarding this matter, but new incentives and levers need to be added, especially in veterinary medicine.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.23	9.00		0	0	22

284. ENVIRONMENT IN EU AND NAP *(ENVIRONMENT)*

Fully include environment (water, manure, sewage, and use in plats/crops) in the EU Action plan and in NAPs, in line with the One Health approach (e.g. surveillance).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.19	9.00		1	0	22

246. ENSURE THE AVAILABILITY OF ANTIBIOTICS *(HUMAN AND ANIMAL HEALTH)*

This should be a priority at EU level.

Include the topic of securing supply of antibiotics in the upcoming international instrument on pandemics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.19	8.00		1	0	22

140. PREVENTING DEVELOPMENT AND SPREAD OF INFECTIOUS DISEASE *(HUMAN HEALTH)*

Improve infection prevention and control (IPC) in human health. The knowledge gained from the covid-19 pandemic should be used to improve general IPC measures, particularly at all levels of healthcare, in hospitals as well as in long-term care facilities and home care, where patients and residents are particularly vulnerable to infections, including resistant infections. In addition, basic hygiene should be promoted also in community settings. Common EU standards, guidelines, or if possible legislation, should be developed regarding:

→ Common definitions of minimum criteria for training within medical specialties responsible for IPC;

→ Common standards for utilization of IPC specialists in non-hospital facilities, e.g. long-term care facilities;

→ Mandatory surveys and reporting of health care-associated infections in long-term care facilities and similar settings.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.18	8.00		0	0	22

216. ACCESSIBLE AND AFFORDABLE RAPID DIAGNOSTIC TOOLS AND RAPID ANTIBIOGRAMS FOR ANIMAL HEALTH PROFESSIONALS *(VETERINARY SECTOR)*

Develop accessible and affordable rapid diagnostic tools and rapid antibiograms for animal health professionals.
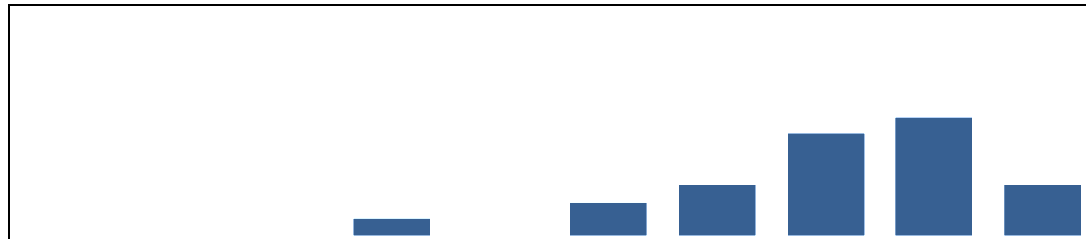
• Medical diagnostics industry involvement in One Health concept.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.15	9.00		2	0	22

267. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS *(ENVIRONMENT)*

Clarify the purpose of environmental monitoring in relation to how and where the results should be applied. Clarify and harmonize methods to conduct environmental monitoring, to ensure that Member States provide comparable results. Clarify whether there is a need for development within the area.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.09	8.00		0	0	22

44. DESIGN AND IMPLEMENT A ONE HEALTH MONITORING AND SURVEILLANCE SYSTEMS FOR ANTIMICROBIAL USE AND AMR *(ONE HEALTH)*

Build these monitoring and surveillance systems for antimicrobial use and AMR on the WHO guidelines, OIE standards, the Codex alimentarius standards as well as the regulation (EU) 2019/6 of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products and Regulation (EU) 2016/429 of the European parliament and of the Council of 9 march 2016 on transmissible animal diseases. Ensure that these monitoring and surveillance systems are analysed in a cross-sectorial manner. The EU agencies should contribute further to the harmonization and interoperability of national and regional systems, in support of the European Commission and the Member States.

→ European agencies such as ECDC, EMA and EFSA should be mandated by European Commission to work on this topic.
→ The EU4Health program might also help support this action.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
8.06	**8.00**		One Health	15	**4**	**0**	**22**
			Human	5			
			Animal	3			
			Environment	0			

16

210. SUPPORT FARMERS IN ORDER TO IMPROVE ANIMAL WELFARE AS WELL AS HUSBANDRY VIA THE COMMON AGRICULTURAL POLICY *(VETERINARY SECTOR)*

Support farmers to improve husbandry and animal welfare through the Common Agricultural Policy.

➔ Introduce financial and regulation incentives in the next CAP for farmers to ameliorate husbandry practices linked to deteriorated animal welfare. The goal is to focus on practices that have an impact on the infection rate of animals, and thus the consumption of antimicrobials;

➔ Those suggestions should be discussed during the meetings with the DG AGRI on the new CAP.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.50		2	0	22

190. BETTER MONITORING OF AMR *(VETERINARY SECTOR)*

Development of a European Antimicrobial Resistance Surveillance network in Veterinary medicine (EARS-Vet), in order to fill the current surveillance gap in diseased animals in Europe and complement the existing EFSA and EARS-Net monitoring. Among others, EARS-Vet would help: i) to support the development of evidence-based guidelines for antimicrobial stewardship in veterinary medicine, ii) to better characterize links between AMC and AMR in animals and iii) to support risk assessment of AMR transmission from animals to humans via non foodborne related routes. Overall, EARS-Vet would contribute to a much stronger One Health strategy for AMR surveillance in Europe.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		0	0	22

102. DEVELOP AND STRENGTHEN REAL-TIME SURVEILLANCE TOOLS AND COMMON EUROPEAN INDICATORS *(HUMAN HEALTH)*

Develop real time surveillance tools in order to collect high quality data on the use of antimicrobials (both quantity and appropriateness) and resistance to antimicrobials in human health.

The EU4Health programme could support this action. Data generated by those surveillance tools should be analyzed in a cross-sectorial way, when relevant.

The 2017 ECDC, EMA and EFSA common indicators on AMR and antimicrobial use should also be updated and expanded, and their active use should be ensured at national level. Those indicators should be associated with targets (relevant to the different national contexts).

➔ A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC to develop the common indicators on AMR and antimicrobial use. The 2017 ECDC, EMA and EFSA common indicators should be used as the basis for discussion.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		0	0	22

188. PROMOTE HARMONIZED MONITORING OF AMR OF ANIMAL PATHOGENS AT EU LEVEL *(VETERINARY SECTOR)*

There is an urgent need for harmonized and coordinated approach for AMR surveillance in bacterial pathogens of animals across Europe.

➔ Provide European guidance for developing surveillance system of AMR in animals;
➔ Provide financial support to Member States for implementing this monitoring;

This action could be supported through the establishment of EARS-Vet.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	**8.00**		0	0	22

250. IMPROVE THE AVAILABILITY OF OLD/NARROW SPECTRUM ANTIBIOTICS *(HUMAN AND ANIMAL HEALTH)*

Dress a list of antibiotics of special medical value that must be safeguarded, both for human and veterinary medicine

➔ Enter into EU-wide agreement with pharmaceutical companies to ensure continuous availability of such antibiotics;
➔ Secure the supply.

This action could be part of the Pharmaceutical Strategy for Europe and HERA.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	**8.00**		1	0	22

245. INCREASE LONG-TERM AND SUSTAINABLE ACCESS AND AVAILABILITY OF ANTIBIOTICS TO PRESERVE EFFECTIVE TREATMENT OF BACTERIAL INFECTIONS *(HUMAN AND ANIMAL HEALTH)*

Access to both new and older antibiotics need to be guaranteed. This issue is highly relevant for all patients in the EU to ensure optimal treatment, including for the society since it aims to curb AMR.

Availability problems include both when products are not launched and when established products are withdrawn from markets as well as more or less temporary shortages. Due to increasing AMR and scarcity of new agents, the antibiotics that already exist must be used responsibly. However, older but still effective antibiotics run the risk of being taken off the market due to small volumes and limited revenues for these. Even if there are some ongoing national, EU and global initiatives to strengthen availability, a coordinated EU initiative would greatly contribute and give added value.

The aim should be to create a diverse portfolio and stable supply chains to secure the best treatment and to minimize resistance development. Methods to increase access include different push and pull incentives and can be related to economic incentives, procurements, legal and regulatory aspects, as well as increasing transparency to assure effective early warning systems. For some aspects, more research is required. One way to achieve this could be through a strategy implemented by HERA. It may be monitored by measuring changes in the number of products introduced and taken off the market in the EU or in individual MS, and also by measuring changes in serious shortages of antibiotic products.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		1	0	22

181. EXAMINE ISSUES WITH AVAILABILITY OF FIRST-LINE ANTIMICROBIALS *(VETERINARY SECTOR)*

Examine how the pharmaceutical industry can be incentivised to licence and produce lower priority antimicrobials in all necessary formulations to ensure prescribing vets have options to treat infections that are expected to respond to category D AMs (AMEG) wit first line products rather than selecting AMs from a higher priority category due to lack of treatment options:

➔ Products can be discontinued if the cost-benefit analysis is unfavourable;

➔ Market supports may be necessary to keep certain products/ formulations on the market.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	**9.00**		**0**	**0**	**22**

106. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS *(HUMAN HEALTH)*

Strengthen data collection and surveillance systems at EU level for AMR in hospital-acquired infections (HAI) and in the community through current funding programs. Continue improving data reporting and quality of data to EARS-Net and develop model for continuous monitoring and annual reporting of HAI and AMR in HAI (move from Point Prevalence Surveys every other to third year to stabile, continuous reporting via ECDC). Continue to support the development and implementation of data collection and surveillance systems at EU level of antimicrobial use, including at more detailed level (hospital, department, and specialty) through current funding programs and ESAC-Net. Granular, high quality data pave the way for future integrated monitoring systems that can combine emergence and spread of resistant bacteria with usage per "compartment". This will also enable setting more specific reduction targets for antimicrobial use in specific settings.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		0	0	22

203. BIOSECURITY AND IMPLEMENTATION OF SANITARY MEASURES TO PREVENT OR MINIMIZE THE RISK OF TRANSMISSION OF INFECTIOUS DISEASES IN FARM ANIMALS *(VETERINARY SECTOR)*

Encourage the operators to improve animal husbandry processes as regards to management and biosecurity by advisory support and through the CAP.

Support vaccination campaigns to improve animal health. Organize promotion actions towards encouraging vaccinations.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		1	0	22

204. PROVIDE BIOSECURITY INFORMATION AND BENCHMARK TOOLS FOR FARMERS AND VETERINARIANS *(VETERINARY SECTOR)*

Farmers, together with veterinarians, need to be able to evaluate their own biosecurity status, to identify gaps in biosecurity and to develop a plan of action based on processed information on biosecurity measures (effectiveness, economics, legal obligation, etc.). Suitable tools are needed for this purpose.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		1	0	22

214. UPDATE IN THE LEAFLET THE DOSAGE INFORMATION AND DURATION OF TREATMENT OF OLD/NARROW SPECTRUM ANTIBIOTICS (VETERINARY SECTOR)

Encourage the pharmaceutical sector to update in the leaflet the dosage information and duration of treatment of old/narrow spectrum antibiotics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		2	0	22

131. CONSIDER PHARMACEUTICAL POLLUTION, INCLUDING AMR, IN UPCOMING REVISIONS OF EU LEGISLATION *(HUMAN HEALTH)*

In order to contain AMR in the environment, emissions to the environment should be minimized. There is now a window of opportunity to address this in upcoming revisions of several EU legislative acts. The upcoming revision of the legislation on medicinal products for human use provides an opportunity to enhance the regulation of environmental aspects of medicinal products, including the spread and development of AMR in the environment. For example, the environmental effects should be considered in the risk-benefit analysis in the authorisation process, without compromising the patient's health. The upcoming revision of the Industrial Emissions Directive and the Urban Wastewater Directive could be used to take action against pharmaceutical pollution, including from AMR, within the European Union. Further, in order to tackle emissions from production in third countries, the introduction of environmental requirements with respect to antimicrobials in the legislations related to production of active substances and medicinal products for human use and the Good Manufacturing Practices (GMPs) should be considered, taking into account potential effects on availability. This would enable to set emission and discharge limit values for production.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.90	8.00		1	0	22

275. PROVIDE EU GUIDELINES AND REGULATION REGARDING PRODUCTION OF PHARMACEUTICALS AND WASTEWATER MANAGEMENT (ENVIRONMENT)

The most cost-effective measures including legal measures to mitigate the effects of pharmaceuticals in the environment including the fight against AMR should be assessed based on the report "Communication from the Commission to the European Parliament, the council and the European Economic and Social Committee European Union Strategic Approach to Pharmaceuticals in the Environment". The communication provides 6 areas of initiatives and specific measures including;

➔ Support the development of pharmaceuticals intrinsically less harmful for the environment and promote greener manufacturing.
➔ Improve environmental risk assessment and its review.
➔ Reduce wastage and improve the management of waste.
➔ Expand environmental monitoring and fill other knowledge gaps.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.90	8.00		1	0	22

234. POST-GRADUATE EDUCATION FOR VETERINARY PRACTITIONERS ON AMR AND RESPONSIBLE USE OF ANTIMICROBIALS *(VETERINARY SECTOR)*

Develop lifelong learning and up to date status of knowledge representing materials for veterinary practitioners focusing on responsible use of antimicrobials, AMR control, and One Health concept (in collaboration with FVE).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.86	8.00		1	0	22

206. SUPPORT FARMERS – PURSUING BETTER BIOSECURITY AND ANIMAL WELFARE (*VETERINARY SECTOR*)

Support farmers to improve biosecurity and animal welfare through the common agricultural policy (CAP).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7,85	8,50		2	0	22

270. IDENTIFY MAJOR SOURCES AND PATHWAYS OF EMISSIONS OF ANTIBIOTIC RESIDUES AND ANTIMICROBIAL RESISTANCE TO THE ENVIRONMENT BY JOINT SCREENING EFFORTS AMONG EU 27 *(ENVIRONMENT)*

Background: The knowledge on sources, pathways and magnitudes of emissions needs to increase on an EU level in order to develop effective actions and policies to limit the development and spread of antimicrobial resistance. Since the problem picture is diverse, several EU initiatives and actions are needed.

Action: Include AMR in Horizon Europe Programmes and other relevant research initiatives. Screening efforts could e.g. be included in Horizon Europe Partnership on Risk Assessment of Chemicals (PARC).

Deliverable: Mapping emissions of antibiotic residues and antimicrobial resistance from relevant sources among EU 27 MS. Joint screening efforts measuring levels of antibiotic residues and antimicrobial resistance in e.g. wastewater treatment plants, industry effluents and farming facilities within EU.

Beneficiaries: EU and national and local authorities.

Effect: Building monitoring capacity and enable more MS to screen emissions due to the co-financing procedure under e.g. Horizon Europe. A baseline to enable development of effective policies and measures in relevant EU initiatives, strategies, and EU environmental and pharmaceutical legislation to limit the development and spread of antimicrobial resistance. Among the EU legislation there are several directives with policy relevance e.g. connected to wastewater plants (including use of water and sludge), water frame directive, industrial emissions directive, and pharmaceutical directive for humans etc. Might in the long run be a useful indicator to follow up efficiency on implemented policies and measures.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.82	8.00		0	0	22

280. ENVIRONMENTAL MONOGRAPHS *(ENVIRONMENT)*

Support the principle of environmental monographs for veterinary medicines and extend it to antimicrobials in human medicines.

➔ Harmonized environmental information by active substance in the monographs would make it possible to identify the molecule most present in the environment and to give indications as to the biospheres to be investigated in the context of their monitoring.

➔ To have a better understanding of the environment as a reservoir and interface in the transmission of resistance with the human population and with animals.

Rationale: During the marketing authorisation process for medicinal products for human or veterinary use, an analysis of the impact of these medicinal products and/or their major metabolites on the environment is requested. This analysis can be summarized as follows: the assessment is carried out in several phases. The first phase, which is theoretical, consists of estimating the exposure of the environment to the active substance: at the level of surface water for medicinal products for human use (PEC surface water<10 ng/L) and at the level of soil for medicinal products for veterinary use (PECsoil<100µg/kg). According to the "Guideline on the environmental risk assessment of medicinal products for human use", for active substance with an antibacterial mode of action, and no other known pharmacological targets, a targeted effect assessment should be performed for the aquatic compartment. The second phase of the analysis consists of determining the physico-chemical properties of these molecules as well as their fate and eco-toxicity. The description of the transformation of these active substances in the environment, their degradation and their effects at aquatic or terrestrial level could help in understanding the environment as a reservoir and as an interface in the transmission of resistance with the human population and with animals. Many medicines, including antimicrobials, were authorized before October 2005 for veterinary medicines and before December 2006 for human medicines, when this assessment was not required. Therefore, they were not assessed. An active substance administered according to the same route of administration, dosage and indication will have the same ecotoxicological impact whatever the name of the product. Pooling the available data of high quality would allow the ecotoxicological profile per substance to be described in a monograph and would provide more information on the active substances or metabolites to be monitored and the biospheres to be investigated. Such an initiative has already been launched for monographs for veterinary medicines (not restricted to antimicrobials). In January 2022, the European Commission presented to the European Parliament the results of a feasibility study for such monographs. The initiative is strongly supported by many National Competent Authorities. To date, the decision on whether or not to implement these monographs is still unknown.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.82	8.00		5	0	22

ALL SUGGESTIONS

All suggestions, including the Top 10%, are listed below.

COMMUNICATION

1. SUPPORT THE DEVELOPMENT OF COMMUNICATION TOOLS AND STRATEGIES OF BEHAVIOUR CHANGE

Development of information campaigns and educational materials aiming at informing the general public that the inappropriate use and discharge of antimicrobials may have an impact on human and animal health and the environment.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.27	8.00		One Health	14	0	0	22
			Human	5			
			Animal	4			
			Environment	3			

2. COMMUNICATION TOOLS

Support the development of communication tools and the sharing of best practices between Member States to raise individual and public awareness on AMR and the One Health approach. EU-wide campaign with national adaptation

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.55	**8.00**		One Health	15	**0**	**0**	**22**
			Human	4			
			Animal	4			
			Environment	2			

3. BEHAVIOURAL CHANGE

Reinforce understanding and strategies of behavioural changes.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.50	**8.00**		One Health	13	**4**	**0**	**22**
			Human	8			
			Animal	5			
			Environment	1			

4.   SUPPORT THE DEVELOPMENT OF COMMUNICATION TOOLS

Facilitate the communication between Member States regarding their experience in dealing with issues in applying One Health concepts.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.86	7.00		One Health	13	0	0	22
			Human	6			
			Animal	7			
			Environment	1			

5.   JOINT MATERIALS ABOUT AMR AND AMS.

Facilitate the creation and adaptation of joint materials about AMR and AMS, as well as translation of existing materials for use in other countries. Eased the process of translation and adaptation of already existing materials.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.60	7.50		One Health	14	2	0	22
			Human	6			
			Animal	4			
			Environment	2			

6. COMMON ONE HEALTH APPROACH COMMUNICATION STRATEGIES

Develop a European strategy/program for all NAPs to consolidate their One Health communication efforts through:

- Structural support to hire specialists in communication and behaviour change.
- Continuous training focused on best practices to communicate antimicrobial resistance from a One Health perspective.
- Creation of a European One Health communication committee with representatives from all NAPs that works in tune with the Technical Advisory Committee of the European Antibiotic Awareness Day (EAAD) of ECDC and with the World Antimicrobial Awareness Week (WAAW) of the WHO.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.36	7.50		One Health	15	0	0	22
			Human	6			
			Animal	4			
			Environment	2			

7.   IMPROVING AWARENESS

Information campaigns for raising public awareness at EU level - develop models of brochures translated into the official languages of the EU, similar to the common logo created under the EU-JAMRAI project. Education of professionals – development of guidelines at EU level intended for veterinary professionals as well as for farmers to prevention, good management practices in animal production and alternatives. Supporting and promoting good practices and exchanging information on them (by setting up and managing information exchange platforms similar to the One Health Network digital platform).

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.19	8.00		One Health	14	1	0	22
			Human	5			
			Animal	6			
			Environment	2			

8.   HEALTH LITERACY

Strengthening of health literacy through communication tools and information for different people (students, teachers, parents, public)

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.86	7.00		One Health	15	1	0	22
			Human	6			
			Animal	2			
			Environment	1			

9. RAISE AWARENESS ON AMR IN THE BROADER SENSE (INCLUDING ANTIFUNGAL DRUGS, BIOCIDES AND PREVENTING ACTIONS TO AVOID ANTIMICROBIAL USE)

Raise awareness on AMR in the broader sense (including antifungal drugs, biocides and preventing actions to avoid antimicrobial use) :

- Avoid restricting communication to antibiotics only
- For example, include biocidal products in AMR communication. In the context of the COVID pandemic, hygiene and hand disinfection have been shown to be important in countering the spread of the virus. However, this could induce overuse of biocides for domestic use

Set up communication strategy addressing different areas: animal and human health, food industry, general public. The EU4Health program could support this action.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.18	7.00		One Health	15	0	0	22
			Human	5			
			Animal	4			
			Environment	2			

10. STRENGTHEN EDUCATION ON AMR

Specifics training programs focused on antimicrobial resistance communication. Develop and implement Better Training for Safer Food (BTSF)-style training focused on antimicrobial resistance communication with a One Health perspective:

- Fundamentals of communication for behaviour change.
- What is One Health and why is it important?
- International initiatives (EAAD and WAAW).
- Best practices and success stories.
- Practical cases.

Those training would focus specifically on communication officers or other officers in charge of national/regional/local design and implementation of communication activities to raise awareness on AMR. The officers might come from NAPs, regional or local AMR initiatives and or public healthcare facilities.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.90	7.00		One Health	15	1	0	22
			Human	4			
			Animal	4			
			Environment	1			

11. COMMON AMBITIOUS AMR BINDING AGREEMENT OR DIRECTIVE AT EU LEVEL

The European Commission should facilitate discussions with MS to come up with a common binding agreement or directive between the EC and MS, where all MS commit themselves to reach certain objectives/standards, implement certain measures and report on a mandatory basis a set of indicators (with associated targets when possible) to be defined.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.41	7.00		One Health	11	0	0	22
			Human	7			
			Animal	6			
			Environment	3			

12. COMMON AMBITIOUS AMR FRAMEWORK OR AGREEMENT AT EU LEVEL

The European commission should facilitate discussion to come up with a common agreement between the EC and MS, on a voluntary basis, where MS commit themselves to reach certain objectives/standards and report a set of indicators: A subgroup of the AMR OHN could be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.32	6.50		One Health	13	0	0	22
			Human	5			
			Animal	4			
			Environment	2			

13. PROMOTE R&D

Promote R&D with logistical and economic support in One Health on:

- New antimicrobials and alternatives, such as vaccines or new therapies under the one health concept within the framework of any European or national R&D program in healthcare.
- Epidemiology and prevalence of different infections or zoonosis.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.43	8.00		One Health	11	1	0	22
			Human	8			
			Animal	9			
			Environment	0			

14. RESEARCH OUTPUTS SHOULD BE COMMUNICATED TO POLICYMAKERS

All AMR-related projects funded by the EU should present their results in a policy brief, targeting policy-makers, and the European Commission should disseminate these policy briefs to member states.
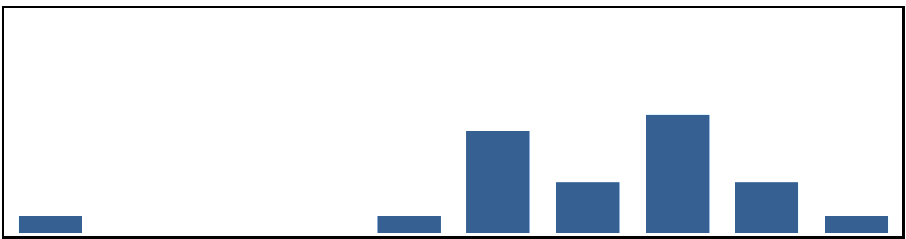
MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.14	8.00		One Health	14	0	0	22
			Human	5			
			Animal	5			
			Environment	2			

15. SUPPORT THE RESEARCH ON THE RESISTANCE INDUCED BY NON-ANTIBIOTIC SUBSTANCES AND BY NON-MEDICALLY IMPORTANT ANTIBIOTICS FOR HUMANS

Support research on the presence and importance of cross/co-resistance induced by:
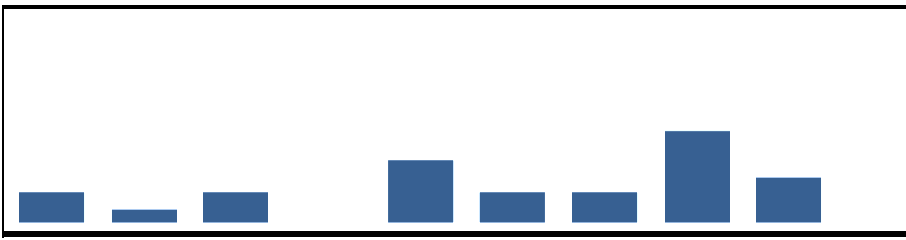
➔ Substances not used as antibiotics (biocides, coccidiostatica, ZnO, etc.) to antibiotics
➔ Non medically important antibiotics for humans, (e.g. florfenicol) to medically important antibiotics

Based on the results, take into account these cross/co-resistances in the surveillance programs at the EU and national levels. Horizon Europe could support this research area.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.09	7.50		One Health	13	0	0	22
			Human	5			
			Animal	5			
			Environment	1			

16. SUPPORT RESEARCH ON THE INFLUENCE OF BIOFILMS ON THE PROMOTION OF AMR AND DEVELOP NEW METHODS FOR BIOFILM TREATMENT

Support research on the influence of biofilms on the promotion of AMR. Horizon Europe could support this research area.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.95	6.50		One Health	11	0	0	22
			Human	7			
			Animal	6			
			Environment	2			

17. REINFORCE RESEARCH EFFORTS ON AMR

Reinforce and expand the EU *One Health* research efforts on AMR, especially on antibiotic resistance. Launch research Chairs on AMR. Use output of initiatives such as JPI-AMR and the planned One Health AMR partnership to strengthen the European action against AMR.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.52	7.00		One Health	15	1	0	22
			Human	5			
			Animal	4			
			Environment	1			

18. RESEARCH ON RAPID AST SYSTEMS
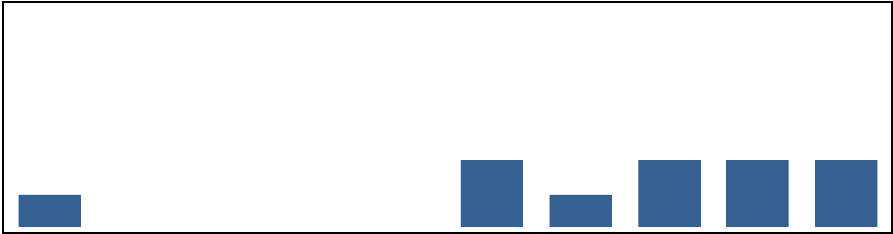
Many diseases require rapid treatment of the affected animals. Laboratory diagnostic tests require a certain period of time until results are available. By shortening this period, antibiotics can be used in a more targeted manner. The development and provision of rapid AST systems for commercial investigations should therefore be accelerated.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.50	8.00		One Health	9	2	0	22
			Human	6			
			Animal	12			
			Environment	0			
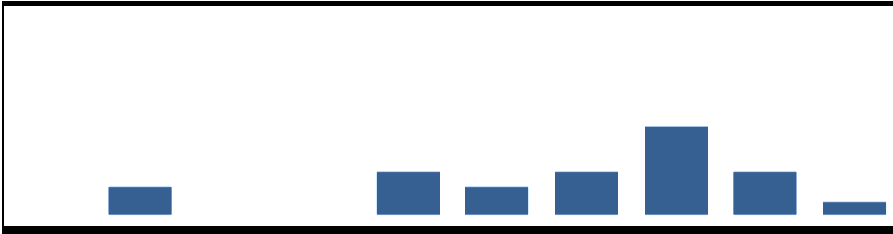
19. STRENGTHENING THE ROLE OF LABORATORY DIAGNOSTICS IN ANTIMICROBIAL THERAPY

Laboratory diagnostics can provide practicing veterinarians with valuable decision support in choosing appropriate antimicrobial therapy. Due to the increased occurrence of resistance, therapy based solely on empirical experience of veterinarians is becoming increasingly difficult. Nevertheless, this service is not sufficiently taken up and the resistance situation in many farms remains unknown. Laboratory diagnostics furthermore represent the basis for the production of stable-specific vaccines and are therefore closely linked to this.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.40	8.00		One Health	8	2	0	22
			Human	4			
			Animal	13			
			Environment	1			

20. OUTREACH OUTSIDE THE EU

Have the EC devote development cooperation funds for NAPs implementation in middle-low income countries.
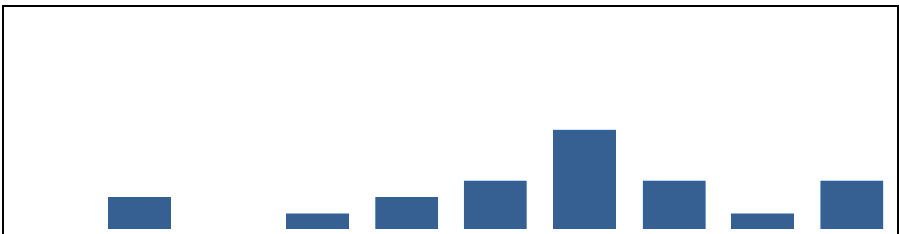
MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.85	7.50		One Health	13	2	0	22
			Human	7			
			Animal	6			
			Environment	1			

21. STRENGTHEN EUROPEAN SUPPORT TO LMIC'S FIGHT AGAINST AMR

The EU and MS could support global and multilateral initiatives such as:
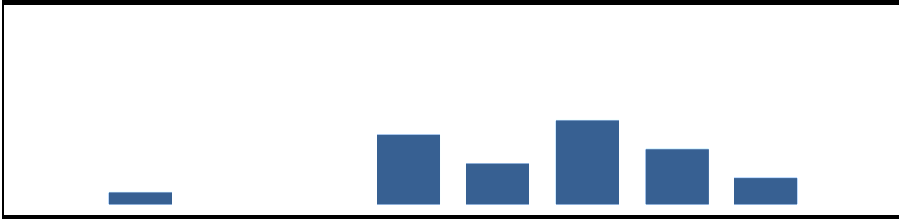
➔ AMR Multi-Partner Trust Fund
➔ The One Health High Level Expert Panel (OHHLEP) proposed by France with the support of Germany and set up by WHO, FAO, OIE and UNEP in May 2020.

Those initiatives aim to support implementation of national action plans against AMR in LMICs.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.71	**7.00**		One Health	13	**1**	**0**	**22**
			Human	7			
			Animal	4			
			Environment	1			
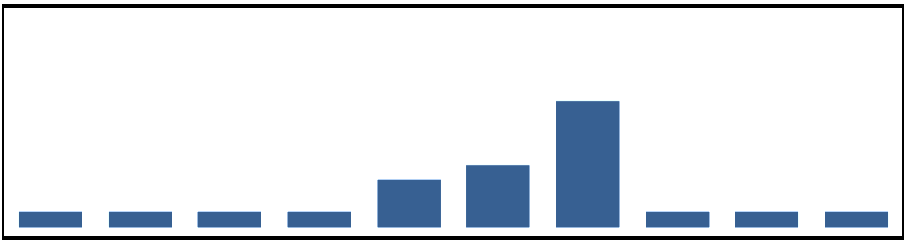
22. INTERNATIONAL SUPPORT

Improve the coordination of EU efforts at international level to support low and middle-income countries in fighting AMR.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.52	7.00		One Health	15	**1**	**0**	**22**
			Human	5			
			Animal	3			
			Environment	1			
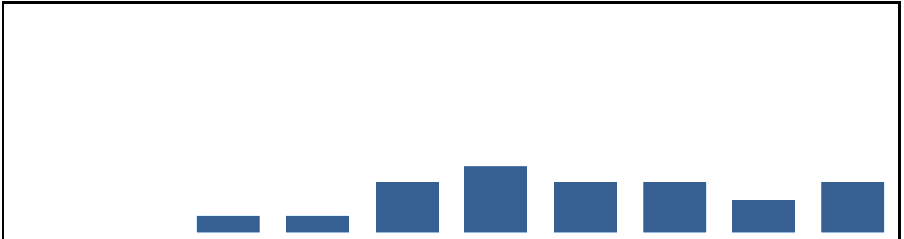
23.   PROMOTE THE OUTREACH TOWARDS LOW AND MIDDLE INCOME COUNTRIES REGARDING AMR

The European Commission should increase its involvement, technically and financially, in the ICARS project whose goal is to develop solutions to mitigate antimicrobial resistance in low and middle income countries.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.00	6.50		One Health	14	0	0	22
			Human	6			
			Animal	3			
			Environment	1			

24.   IMPROVE THE COORDINATION OF EU EFFORTS WITHIN CAPACITY DEVELOPMENT AT INTERNATIONAL LEVEL TO BETTER SUPPORT LOW AND MIDDLE-INCOME COUNTRIES IN IMPLEMENTING THEIR ACTIONS AGAINST AMR

The aim is to build more robust health systems, animal and food production systems as well as minimizing emissions to the environment. Strengthening research and its translation into policy and practices is of relevance. This cans be done through supporting the Quadripartite (FAO, WHO, OIE and UNEP) in its work where the AMR Multi-Partner Trust Fund is key.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.95	7.00		One Health	14	2	0	22
			Human	6			
			Animal	5			
			Environment	2			

25. AMR ONE HEALTH NETWORK

Expand the AMR One Health Network to invite periodically CMO and CVO levels, as well as representatives from the environment sector.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.21	**7.00**		One Health	16	**3**	**0**	**22**
			Human	4			
			Animal	4			
			Environment	1			

26. REINFORCE ONE HEALTH NETWORK

Reinforce the One Health network by organizing more frequent and participative meetings, and actively involve MS in the agenda setting.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.55	**5.50**		One Health	16	**2**	**0**	**22**
			Human	3			
			Animal	3			
			Environment	1			

27. SUBGROUP OHN INTERNATIONAL

Create a European subgroup to reinforce collaboration between MS and the European Commission on the international non-EU arena.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.61	6.00		One Health	14	4	0	22
			Human	6			
			Animal	5			
			Environment	1			

28. ENSURE CONTINUED AVAILABILITY AND ACCESSIBILITY OF 'OLD', NARROW-SPECTRUM ANTIMICROBIALS

Support a stable supply chain of older, narrow-spectrum antimicrobials (such as penicillin and 1st generation cephalosporin) including pediatric formulations, e.g. by encouraging pharmaceutical industries to continue production, perhaps with private/public funding. Different types of penicillin and 1st generation cephalosporin are drugs recommended for treatment of major common bacterial infections. Many European countries have in recent years experienced shortages in delivery of these antimicrobials and some products are no longer available on the market. This makes it difficult to maintain the recommended use of narrow-spectrum antimicrobials and drives the usage towards a choice of broader-spectrum products, which contributes to maintaining a high level of AMR.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
8.41	9.00		One Health	8	0	0	22
			Human	10			
			Animal	12			
			Environment	0			

29. ACTIONS ON CORRECT DISPOSAL OF ANTIMICROBIALS TO REDUCE EMISSIONS

Provide guidance to Member States for the development of mechanisms for the collection and disposal of waste of medicinal products.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.48	8.00		One Health	12	1	0	22
			Human	6			
			Animal	5			
			Environment	3			

30. STRENGTHEN EDUCATION OF CHILDREN AND PARENTS AS WELL AS CHILDHOOD PROFESSIONALS ON AMR

Support Member states as well as scientific, educational and awareness-raising communities in increasing the use of educational tools targeting children and teenagers (primarily through education in school and curricula) as well as parents and childhood professionals.
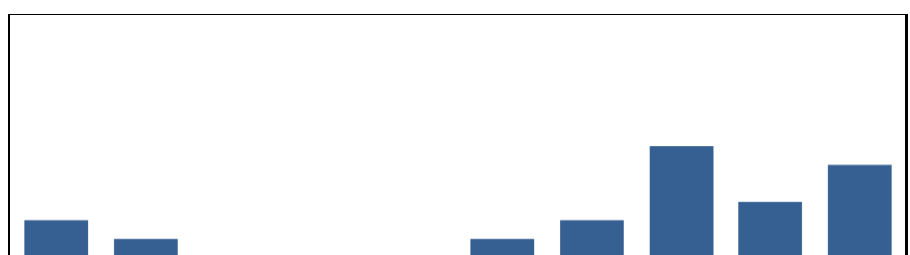
➔ Develop further the e-Bug program aiming at supporting teachers to educate children and teenagers and encourage its use by Member States
➔ Support the inclusion and development of additional educational initiatives and resources.
➔ These actions should be included in the upcoming joint action on AMR within the EU4Health program.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.18	8.00		One Health	14	0	0	22
			Human	5			
			Animal	4			
			Environment	2			

31. STRENGTHEN EDUCATION ON AMR

Support Member States as well as scientific, educational and awareness-raising communities in increasing the use of educational tools as recommended by the EU-JAMRAI.

➔ Develop further the e-Bug program aiming at supporting teachers to educate children and teenagers and encourage its use by Member States.

➔ Support the inclusion and development of additional educational initiatives and resources.

➔ These actions should be included in the upcoming joint action on AMR.

- Develop tools and recourses which can be used for different age groups (children, teenagers, students and adults) and professional background.

- Update and expand the obligatory common module focused on rational use of antimicrobials and infection prevention and control in the study program of medicine and medical post-graduated education.

- Develop the obligatory common module focused on AMR One Health education which can be used in the standard of training in different study programs in the field of public health as well as biological and environmental studies.

- The obligatory introduction to the study programs of agricultural studies (related to livestock breeding, companion and even exotic animals) and veterinary studies, a module strictly focused on: the rational use of antibiotic therapy in animals, currently applicable regulations and programs implemented at the national, EU or global level, related to preventing the spread of resistance and the risks associated with the unjustified use of antibiotics in agriculture - perhaps requires changes on the standard of training for the profession of a veterinarian

- Increasing the chances for the application of veterinary scientific projects focused on research related to the control, monitoring and prevention of drug resistance in animals (in Poland at the National Science Center there is still no panel of veterinary studies) or a broadly understood panel of research on drug resistance in microorganisms from humans, animals and in the environment.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.45	**8.00**		One Health	16	**2**	**0**	**22**
			Human	4			
			Animal	4			
			Environment	1			

32. STRENGTHEN EDUCATION ON AMR

Promote education in AMR in an intersectoral manner. Thanks to educational frameworks to support an approach to AMR guideline. Thus, all the sectors involved will know the most important issues in a particular way but also One Health in AMR issues.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.32	7.00		One Health	15	3	0	22
			Human	4			
			Animal	5			
			Environment	2			

33. STRENGTHEN EDUCATION PROGRAMS FOR AMR
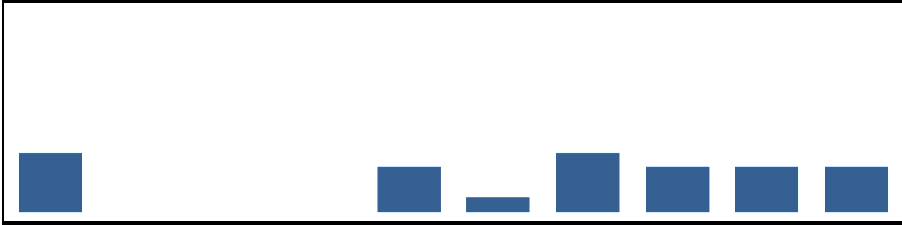
Develop educational tools for professionals (medicine, veterinary medicine, and environment) and the general public.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.38	7.00		One Health	16	1	0	22
			Human	4			
			Animal	4			
			Environment	1			

34. INVEST FURTHER ON AMR EDUCATION AT NATIONAL AND EU LEVELS
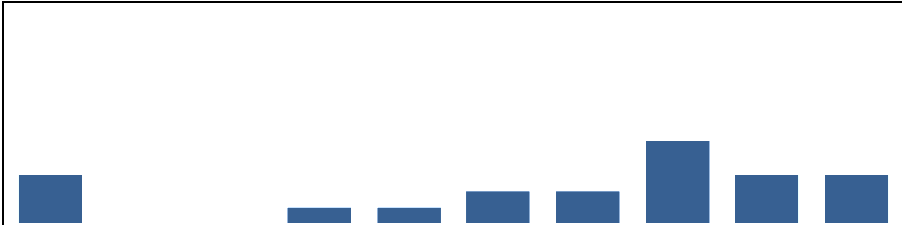
Support educational tools on AMR, both for citizens, students and professionals in human, animal, food and environmental health (further develop the e-bug tool including all sectors).

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.38	7.00		One Health	15	1	0	22
			Human	5			
			Animal	4			
			Environment	2			

35. RECOMMENDATIONS FOR SCHOOL AND ACADEMIC CURRICULUMS

Provide recommendations and specifics of school and academic curriculums to be implemented in education programs about AMR and AMS.

• Recommendations for amount of ETC for schools and universities to be dedicated to AMR and AMS depending on the education level.

• Specific materials offered and allowed to be translated and adapted (e.g. e-bug tool, etc.)

• Training for teachers provided.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.75	8.00		One Health	15	2	0	22
			Human	5			
			Animal	4			
			Environment	1			

36. FACILITATE INTERNATIONAL COOPERATION AND PROFESSIONAL EXCHANGE PROGRAMS

Funding for international cooperation in projects and professional exchange programs to gain experience, adapt and implement already existing and successful practices in other countries

• Specific courses, workshops, internships and observerships etc. organized on a regular basis.

• Training for industry professionals in AMR and antimicrobial stewardship (AMS) practices in countries with higher expertise and experience to "train the trainer".

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.77	**7.00**		One Health	14	**0**	**0**	**22**
			Human	5			
			Animal	5			
			Environment	1			

37. DEVELOP COMMON EU INDICATORS AND MEASURABLE GOALS

Create an EU level protocol.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.89	**7.00**		One Health	15	**3**	**0**	**22**
			Human	5			
			Animal	4			
			Environment	1			

38. DEVELOP COMMON INDICATORS OF AMR BETWEEN THE HUMAN, ANIMAL AND ENVIRONMENT HEALTH SECTORS

In order to allow a "One Health" analysis of the origin, the propagation and the multiplication of AMR, there's a need for common indicators in the 3 sectors (i.e. an indicator using the same couple target/molecule, and the same units of measurement). In addition to the EARS-Net and EARS-Vet project, as well as AMR surveillance from ECDC and EFSA, an "EARS-environment" should be created.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.68	8.00		One Health	15	0	0	22
			Human	4			
			Animal	5			
			Environment	1			

39. DEVELOP COMMON INDICATORS

Develop common EU indicators and measurable goals on the use of antimicrobials and on AMR, notably by updating and strengthening the 2017 ECDC, EMA and EFSA indicators and ensuring their active use at Member State level while ensuring that the objectives are differentiated according to the different national contexts.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.67	8.00		One Health	16	1	0	22
			Human	4			
			Animal	4			
			Environment	0			

40. FACILITATE THE DEVELOPMENT OF EUROPEAN STANDARDS, GUIDANCE AND INDICATORS ON AMS, IPC AND BIOSECURITY PRACTICES WITH A ONE HEALTH APPROACH

The European Commission should develop further as relevant the existing set of common indicators on AMR and antimicrobial consumption developed by ECDC, EFSA and EMA, and broaden their scope to monitor progress made against shared objectives across the EU. This should be done both at the European level (within the existing and future EU One Health action plan) and at the Member State level (national action plans). It is crucial to develop a set of such key indicators with associated targets (e.g. on AMS, biosecurity and IPC programs, antibiotic usage, including quantity and appropriateness and AMR) for the human and animal health sectors, that also integrate environmental issues (with common One Health indicators when possible), that might be used by Member States on a voluntary basis.

➔ European agencies such as ECDC, EMA and EFSA should be mandated by the European Commission to develop such guidance;

➔ A subgroup of the AMR OHN could be created to specifically discuss the topic and make concrete recommendations together with EMA, EFSA and ECDC.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.09	**8.00**		One Health	16	**0**	**0**	**22**
			Human	4			
			Animal	4			
			Environment	1			

41. CREATE GOOD PRACTICE GUIDELINES

Identification of good practices on AMR based on lessons learnt from NAPs implementations. Sharing successful experiences and methods between different sectors and countries can lead into their replication and application at European level and therefore be recommended as a model or guidelines.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.95	**7.50**		One Health	16	**0**	**0**	**22**
			Human	4			
			Animal	4			
			Environment	1			

42. MONITORING AND REPORTING STANDARDS AND INDICATORS

Monitoring and reporting standards and indicators is needed to contribute to improving the level of preparedness and response measures to cross-border health threat across the EU, in line with the Proposal for a Regulation of the European parliament and the council on serious cross-border threats to health and repealing Decision No 1082/2013/EU, as well as the ECDC's new mandate.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.67	**8.00**		One Health	13	**1**	**0**	**22**
			Human	7			
			Animal	5			
			Environment	1			

43. INCREASED KNOWLEDGE THROUGH ENHANCED SURVEILLANCE

There is a need to strengthen the environmental monitoring of antimicrobials. It should be explored how to coordinate action on EU-level.

Coordination on monitoring need to be done in several sources, both in surface water, groundwater and wastewater. Since there is on-going revision of the lists of surface- and groundwater pollutants and in the rules of urban waste treatment, the different legislation need to be in harmony. Linking publicly available environmental information to harmonized limit values is an opportunity close at hand at present. This could be closely linked to a strengthened environment risk assessment (ERA) and conditions of use in the revisions of EU legislation relating to medicinal products for human. A developed, transparent, and publicly available environmental risk assessment on medicinal products, and improved risk mitigation related to conditions of use would be a very valuable source of information:
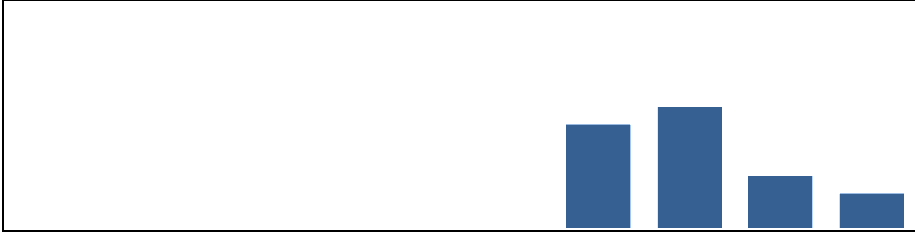
➔ when setting emission limit values but also ;

➔ when developing for instance national medical treatment recommendations that consider both the need for the treatment (human, animal) as well as the environment, hence tools for prudent use ;

➔ for risk mitigation measures ;

➔ for environmental prioritisation and monitoring.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.60	8.00		One Health	10	2	0	22
			Human	3			
			Animal	4			
			Environment	8			

44. DESIGN AND IMPLEMENT A ONE HEALTH MONITORING AND SURVEILLANCE SYSTEMS FOR ANTIMICROBIAL USE AND AMR

Build these monitoring and surveillance systems for antimicrobial use and AMR on the WHO guidelines, OIE standards, the Codex alimentarius standards as well as the regulation (EU) 2019/6 of the European Parliament and of the Council of 11 December 2018 on veterinary medicinal products and Regulation (EU) 2016/429 of the European parliament and of the Council of 9 march 2016 on transmissible animal diseases. Ensure that these monitoring and surveillance systems are analysed in a cross-sectorial manner. The EU agencies should contribute further to the harmonization and interoperability of national and regional systems, in support of the European Commission and the Member States.

➔ European agencies such as ECDC, EMA and EFSA should be mandated by European Commission to work on this topic.
➔ The EU4Health program might also help support this action.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
8.06	**8.00**		One Health	15	**4**	**0**	**22**
			Human	5			
			Animal	3			
			Environment	0			

45. DESIGN AND IMPLEMENT A "ONE HEALTH" MONITORING AND SURVEILLANCE SYSTEMS FOR AMR, TO FOLLOW THE AMR TRENDS AND TAKE MEASURES TO LIMIT THE ASSOCIATED RISKS

The JIACRA initiative should be supported and developed, as well as a gathering of the agencies (ECDC, EFSA) steering the different AMR monitoring system (EARS-net, EARS-vet). Need for a gathering of the different AMR monitoring and surveillance systems in the EU.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.10	7.00		One Health	14	1	0	22
			Human	6			
			Animal	5			
			Environment	1			

46. CO-FINANCING FOR AMR MONITORING AND AMS IMPLEMENTATION

Extend EC co-financing for AMR monitoring and AMS implementation.

• Strengthen the legal requirements for environmental sector inclusion in AMR monitoring, e.g., through water, soil, wastewater monitoring.
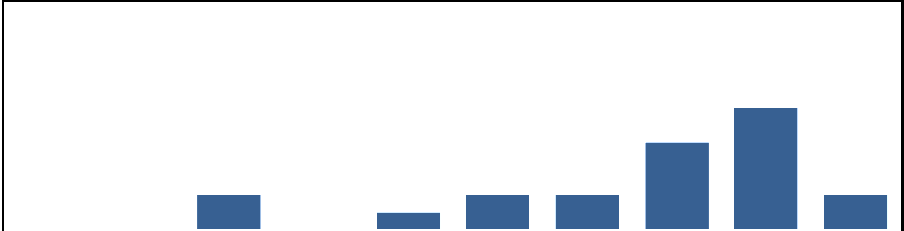
MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.50	8.50		One Health	12	4	0	22
			Human	2			
			Animal	5			
			Environment	5			

47. DATA GAPS
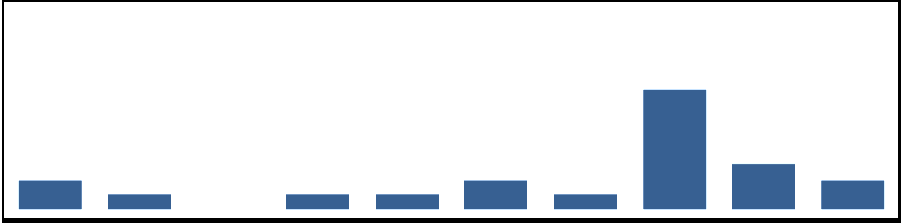
Continue supporting the monitoring of indicator bacteria and/or their resistance traits by improving contribution from MS and their representativeness.

Develop and introduce a generic model for future improved monitoring of indicator bacteria in a One Health perspective like the EU monitoring of indicator bacteria in food, by including live animals, humans (healthy individuals as well as sick) and the environment. Develop criteria for when to monitor bacteria (based on pathogenicity and/or risk of clonal spread) and when to monitor resistance genes as well as which methods to use for monitoring. Consider supporting the development of an integrated European database where information on sequence types and resistance genes per year per country is available. Data should be made available for both the general public and for researchers and government agencies. The criteria for access to such a database should be considered. Inclusion of different indicator bacteria and/or their resistance genes should be reviewed periodically (e.g. every 5 years).

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.62	8.00		One Health	16	1	0	22
			Human	4			
			Animal	4			
			Environment	1			

48. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS

Defining criteria and building harmonized systems for data sharing in a close to real time manner, both within the individual sectors as well as across sectors with a One Health approach. Develop models for maintenance of these systems.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.81	8.00		One Health	15	1	0	22
			Human	5			
			Animal	4			
			Environment	1			

49. IMPROVE REAL TIME DATA COLLECTION & SURVEILLANCE

Improve data collection and surveillance systems at EU level by developing stronger real time surveillance tools and high quality data on the use of antimicrobials and the appearing resistance to antimicrobials at human, animal and environmental levels.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.86	8.00		One Health	15	0	0	22
			Human	5			
			Animal	4			
			Environment	1			

50. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS

Strengthen the integrated One Health analysis of data through the JIACRA collaboration by including monitoring/surveillance data from the environment and publish the report yearly.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.67	8.00		One Health	13	1	0	22
			Human	6			
			Animal	6			
			Environment	1			

51. DEVELOP DATA COLLECTION TOOLS

Create common surveillance tools for human, animal and environment sectors.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.68	**8.00**		One Health	15	**3**	**0**	**22**
			Human	5			
			Animal	4			
			Environment	1			

52. FACILITATE CROSS SECTORAL COLLABORATION BETWEEN HEALTHCARE AND VETERINARY PRACTITIONERS

There is much to be gained by fostering grater communication between healthcare and veterinary practitioners and both sectors have the potential to share learnings which will benefit both human and veterinary medicine and help improve the approach to current and future pandemics.

➔ Set up working groups at national and EU level fr both sectors to come together and share best practices in IPC/AMS.
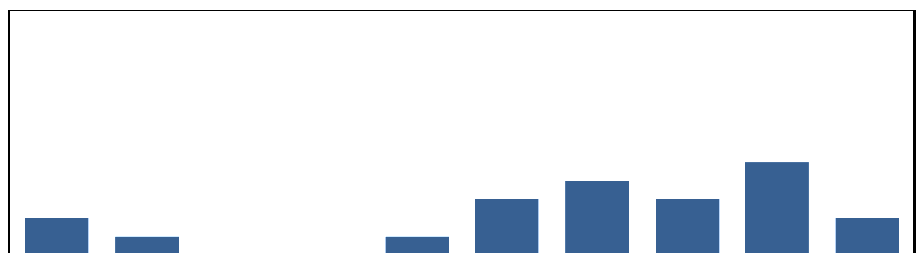
MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.81	**7.00**		One Health	8	**1**	**0**	**22**
			Human	12			
			Animal	12			
			Environment	0			

53. STRENGTHENING THE EUROPEAN COMMISSION'S ACTION ON AMR BY BETTER ASSISTING MEMBER STATES

- Technical and financial support at Member State's level to improve and implement the measures set out in the National One Health Action Plans in all sectors and support scientific projects to develop alternatives to antimicrobials.

- In order to monitor and assess the progress of National One Health Action Plans and the implementation of the Green Deal targets, support could be envisaged, for example, by identifying appropriate indicators (based on WHO/OIE/FAO publications, EU Agencies, JAMRAI, scientific literature, etc.) to control and monitor antimicrobial use and development of AMR. The establishment of a set of qualitative and quantitative indicators to monitor levels of antimicrobial use and resistance, which could be used at both national and European level to monitor the progress of the European Action Plan/National Action Plans on AMR, is considered as a useful tool.

- With regard to the plant health sector, in case the EC considers that measures need to be included at this stage in the national action plans against AMR (taking into account the questions in the Review tool of the National Action Plans), it is necessary to assist MSs with guidance documents and recommendations at EU level.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.86	7.00		One Health	14	1	0	22
			Human	6			
			Animal	5			
			Environment	1			

54. REGULAR MONITORING AND EVALUATION OF PROGRESS OF NATIONAL ACTION PLANS INCLUDING DEVELOPMENT OF SPECIFIC TARGETS FOR REDUCTION OF ANTIMICROBIAL CONSUMPTION AND MANAGEMENT OF RESISTANT MICROORGANISMS

Strengthen the development and implementation of national action plans (NAPs), and monitor and publish Member States progress. Ensure that NAPs include functional mechanisms for regular monitoring and evaluation of progress, especially in-depth evaluation prior to major revisions to guide their further development.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.29	7.00		One Health	15	1	0	22
			Human	6			
			Animal	4			
			Environment	0			

55. PUBLIC HEALTH

Continue to support the development and implementation of national action plans.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.83	7.00		One Health	14	4	0	22
			Human	6			
			Animal	4			
			Environment	1			

56. SUPPORT THE DEVELOPMENT AND IMPLEMENTATION OF NATION ACTION PLAN

Provide guidance and technical support in the development and implementation of national action plans.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.33	7.00		One Health	16	1	0	22
			Human	4			
			Animal	3			
			Environment	1			
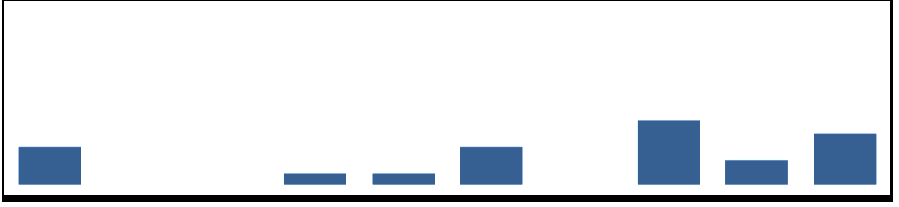
57. SUPPORT NAPS

Continue to support the development and implementation of national action plans, and monitor and publish Member States progress. Financial contribution to the development of national action plans.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.57	7.00		One Health	16	1	0	22
			Human	4			
			Animal	4			
			Environment	1			
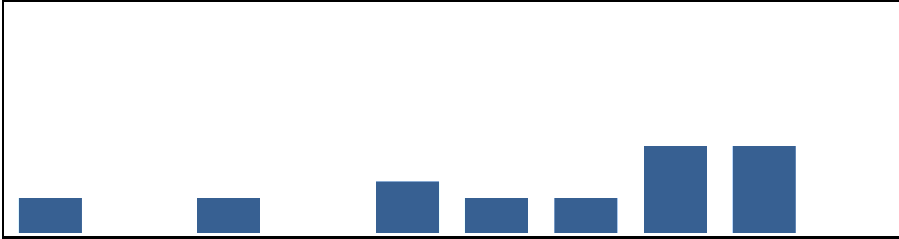
58. BOOST EUROPEAN FINANCING OF THE NAPS

Make funding calls for NAPs that allow to cover unresolved needs of European interest.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.74	8.00		One Health	13	3	0	22
			Human	6			
			Animal	7			
			Environment	1			

59. SUPPORT AND PROMOTE IMPROVEMENT OF NAPS

Continue to support and financing the development and implementation of national action plans in line with EU and Global action plans; Monitor and publish MS progress – monitor with adequate tools that will be developed for this purpose within the framework of the EU and Global action plans; the advertising of the results of the implementation of the MS action plans should be public, though the websites of the entities involved in each MS, wether they are official entities, private or NGO that are integrated into theses action plans. Extension and strengthening of the AMR OH network mandate.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.38	7.00		One Health	16	1	0	22
			Human	4			
			Animal	4			
			Environment	1			

60. DEVELOPMENT OF A COMPREHENSIVE AMR DATABASE CONTAINING INFORMATION ON AMR FOR PROFESSIONALS

A platform should be created in order to provide an up-to-date overview of ongoing research projects, guidelines and existing bibliography in the areas of human and animal health as well as the environment.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.19	8.00		One Health	16	1	0	22
			Human	5			
			Animal	4			
			Environment	1			

61. SET EU TARGETS FOR AMU AND AMR FOR HUMAN HEALTH, ANIMAL HEALTH AND ENVIRONMENT AND REPORT ON MS ACHIEVEMENT

Set EU targets for the use of antimicrobials (both quantity and appropriateness) and resistance to antimicrobials in human health, animal health and environment.
- ➔ Focus on well-defined and measurable targets linked to specific indicators for each sector and for antimicrobials in the broader sense (e.g. including antifungal drugs, vaccination coverage)
- ➔ Ensure follow-up with annual reporting on MS achievements
- ➔ Couple the publication of annual reports with awareness-raising activities
- ➔ Promote the exchange of good practices (e.i. highlight the impactful measures that have been taken by MS to reach the targets)

The EU4Health program could support this action.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.62	8.00		One Health	13	1	0	22
			Human	6			
			Animal	7			
			Environment	1			

62. DEVELOP AND IMPLEMENT A ONE HEALTH MODEL TO REGULARLY COMPARE RESISTANCE GENOTYPES

Develop and implement a model to regularly compare resistance genotypes in isolates from humans, animals, food and the environment in order to facilitate integrated analysis of data between sectors.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.41	8.00		One Health	15	0	0	22
			Human	4			
			Animal	5			
			Environment	2			

63. INTRODUCE GENOME-BASED SURVEILLANCE

➔ Introduce WGS into AMR surveillance systems to identify areas of potential transmission (and to exclude others).

➔ Organize and harmonize the reporting strategy of such results at EU level.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.59	8.00		One Health	14	0	0	22
			Human	5			
			Animal	4			
			Environment	2			

64. WHOLE GENOME SEQUENCING (WGS)

Speed up the implementation of WGS and other molecular typing techniques as gold standard, to get a complete and effective monitoring system of AMR in human, animals and food.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.29	**8.00**		One Health	12	**1**	**0**	**22**
			Human	7			
			Animal	7			
			Environment	0			

65. COMMUNICATION

Put in place the eBug website at a national level.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.11	**7.00**		One Health	12	**4**	**0**	**22**
			Human	8			
			Animal	4			
			Environment	0			

66. COMMUNICATION

Create an AMR OHN subgroup on communication.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.15	6.00		One Health	15	2	0	22
			Human	5			
			Animal	5			
			Environment	1			

67. RAPID DIAGNOSTIC TOOLS

Develop rapid diagnostic tools and rapid antibiograms for health professionals in the human and animal sector, to prevent misuse of antibiotics.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.48	8.00		One Health	11	1	0	22
			Human	9			
			Animal	9			
			Environment	0			

68. SUPPLY OF ANTIBIOTICS

Secure the supply of antibiotics in the EU, notably through a strategy implemented by HERA.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.68	8.00		One Health	9	0	0	22
			Human	11			
			Animal	8			
			Environment	1			

69. IMPROVEMENT OF SURVEILLANCE SYSTEMS FOR HUMAN HEALTH, ANIMAL HEALTH, AND ENVIRONMENTAL AND FOOD SAFETY PROGRAMS, PROMOTING THE INTEROPERABILITY BETWEEN INTEGRATED INFORMATION SYSTEMS IN A ONE HEALTH APPROACH

Strengthen and modernize health information systems, specifically the Public Health Surveillance System; as well as integrating information and improving interoperability between different surveillance systems such as Pharmacovigilance, animal health, food safety, environmental health and others.

Thus, the aim is to improve interoperability in all resistance surveillance with a One Health approach by:

· Including ECDC, EMA and EFSA common indicators on AMR and AMC on a list of outcome indicators as regards surveillance of AMR and AMC in human health, animal health and in the environment.

· Indicators should be associated with targets (according to each different national contexts).

· Enhance ECDC, EMA and EFSA surveillance networks with the objective of develop "Real-time" surveillance tools in order to collect and analyse high quality data on AMC (both quantity and quality) and AMR. Greater frequency in collecting data, should be carry out in a cross-sectorial way.
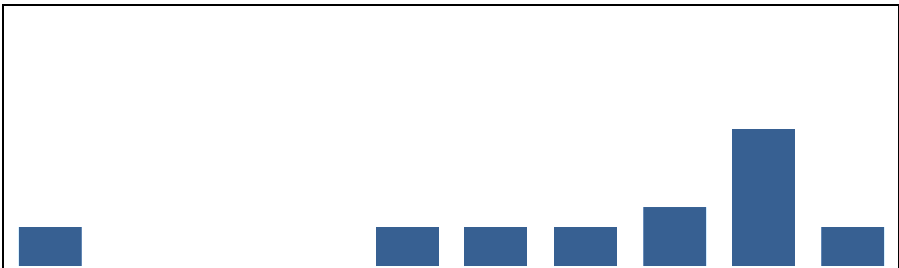
MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.81	**8.00**		One Health	14	**1**	**0**	**22**
			Human	5			
			Animal	6			
			Environment	2			

70. INTRODUCE FINANCIAL AND REGULATION INCENTIVES TO SUPPORT NEW ANTIMICROBIALS DEVELOPMENT

Pull-Push strategies to ensure access to the most important or critical antimicrobials and encourage those whose medical need is not covered (EU-JAMRAI - Research and Innovation Incentives). Detailed initiatives that national policymakers can assess, tailor and implement must be undertaken, such us:

· Product development partnership
· Patents buyouts and strengthened intellectual property right protection
· Targeted incentives with policies to reward the commercialization of new antibiotics that meet unmet public health needs.
· New financing models.

These initiatives and incentives should be designed with the aim of ensuring national access to important antibiotics that meet public health need, and they should focus on paying for the innovation rather than utilization, so-called pull financing.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.25	**8.00**		One Health	7	**2**	**0**	**22**
			Human	13			
			Animal	9			
			Environment	0			

71. SPECIFIC TARGETED ACTIONS IN EU ACTION PLAN

Update the EU Action Plan to include more specific and targeted actions. Include for each action practical tools to facilitate implementation by EC and MS.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.14	7.00		One Health	12	1	0	22
			Human	8			
			Animal	7			
			Environment	2			

72. PROGRESS INDICATORS EU ACTION PLAN

Set measurable progress indicators with concrete deadlines to evaluate the progress on the implementation of the EU Action Plan and at national level.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.55	6.50		One Health	13	2	0	22
			Human	7			
			Animal	7			
			Environment	1			

73. TARGETS FOR REDUCTION AMU

Set clear targets (measurable goals) for reduction of use antimicrobials in humans and animals in the EU (in line with Farm to Fork policy and the Strategic National Action Plans of the MS regarding the Common Agricultural Policy).

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.64	8.00		One Health	11	0	0	22
			Human	9			
			Animal	8			
			Environment	0			

74. FROM ABR TO AMR

Move from antibiotic to antimicrobial: extent current policies and update accordingly the EU Action Plan from "Antibiotic" to "Antimicrobial" to also include virus, fungi and parasites in EU policies and in NAP.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.60	7.00		One Health	12	2	0	22
			Human	6			
			Animal	8			
			Environment	1			

75. DEVELOP EU OH GOVERNANCE STRATEGY BODY

To create a WG with CVO, CMO, HEPA, (and also The Plants) to develop OH Governance strategies to be adopted by countries and to improve intersectorial communication and cooperation. The strategies may be used as examples/suggestions in a broader scale (Global level).

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.00	6.00		One Health	15	2	0	22
			Human	5			
			Animal	5			
			Environment	1			

76. CREATE EU OH PLATFORM FOR INFORMATION SHARING

Create a network system for sharing analysis/methodologies/actions regarding AMR actions and results under OH concept. This will allow the sharing of Best practices and communication tools between MS, to raise Governmental, Public and Individual awareness on AMR and OH approach.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.05	7.00		One Health	15	3	0	22
			Human	5			
			Animal	5			
			Environment	1			

77. ESTABLISHMENT OF A PLATFORM FOR ALL THE INFORMATION REGARDING THE FUNDING OPPORTUNITIES, ONGOING ACTIVITIES AND PROJECTS ON AMR

A single established platform where all the information regarding the funding opportunities, ongoing activities and projects on AMR is available.

Including:

• International cooperation projects;

• Professional exchange programs.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.25	7.00		One Health	15	2	0	22
			Human	4			
			Animal	5			
			Environment	1			

78. ESTABLISH AN EU OH CONSULTATION BODY

Establish a Consultation body (experts) at EU level to support the implementation of best practices.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.35	5.00		One Health	15	2	0	22
			Human	4			
			Animal	5			
			Environment	1			

79. ESTABLISH AN EU AMR PUBLIC COMMUNICATION SYSTEM

Establish an EU AMR emergency/risk/pharmacovigilance communication network system (the need to develop a strategy to harmonize and promote public information)

Establish an operational plan that can be activated during a crisis that should not be managed by using the existing structures. More specifically, contributing to secure coherent crisis management via enhanced communication activities and information gathering. The intention is to limit the consequences of crises with respect for national differences. In other words, the activities initiated on basis of this document may not interfere with national competences. Contributing to maintain the public's trust and confidence in the actors, driven by science. The plan could envisage an organization when there is no crisis and an organization when the plan is activated; internal and external communication.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.11	6.00		One Health	14	3	0	22
			Human	6			
			Animal	4			
			Environment	0			

80. PROMOTE STRATEGIES TO ACHIEVE BEHAVIOUR CHANGES

Reinforce understanding and define strategies of behavioral changes – methodologies /media/ publicity channels.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.32	7.00		One Health	13	0	0	22
			Human	7			
			Animal	5			
			Environment	1			

81. STRENGTHEN THE COMPONENT OF ENVIRONMENT IN NAP

To develop further environmental component in NAP.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.52	**8.00**		One Health	8	**1**	**0**	**22**
			Human	4			
			Animal	4			
			Environment	8			

82. EU REGULATION ON THE MANDATORY EXISTENCE OF NATIONAL GOVERNING BODIES OF AMR OH

Indicators: Production of the Regulation; Number of EU countries with a national governing body OH AMR over total number of EU countries.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
4.95	**5.00**		One Health	15	**1**	**0**	**22**
			Human	5			
			Animal	4			
			Environment	0			

83. TRANSFORMING THE EU AMR OH NETWORK INTO A PROACTIVE COLLABORATIVE SUPERVISING BODY ON EU AMR OH

Indicator: Number of collaborative sessions per year.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
4.30	4.50		One Health	15	2	0	22
			Human	5			
			Animal	5			
			Environment	0			
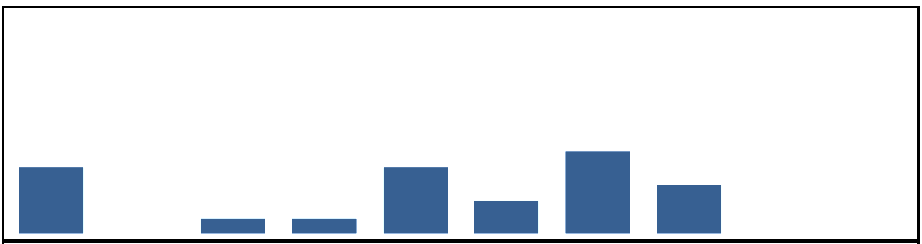
84. CREATION OF AN EU ACADEMY ON AMR (AMC/IC)

Creation of an EU Academy on AMR/AMC/IC with the purpose of catalyzing education, quality improvement initiatives and research on AMR/AMC/IC, possibly linked to the EU AMR OH Network. *Indicator: Number of activities of the EU Academy.*

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
4.67	5.00		One Health	15	1	0	22
			Human	4			
			Animal	5			
			Environment	1			
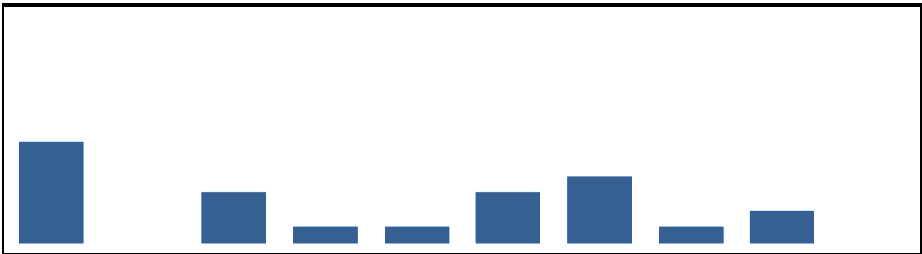
85. CREATION OF AN EUROPEAN TASK FORCE, EU-FINANCED, TO HELP AND CATALYZE THE IMPLEMENTATION OF NATIONAL SYSTEMS OF ANTIMICROBIAL STEWARDSHIP

This Task Force could work linked to the EU OH AMR governing body and the EU OH AMR Academy, would study local/national systems and provide educational and behavioral guidance for implementation of AMS. *Indicator: Number of countries with mandatory AMS systems for hospital, primary care and vet areas.*

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
5.10	**5.50**		One Health	14	**2**	**0**	**22**
			Human	5			
			Animal	6			
			Environment	0			

86. CREATION OF A TASK FORCE FOR RAPID RESPONSE TO AMR EMERGENCIES

Also linked to EU OH AMR governing body, to EU OH AMR Academy and to HERA. *Indicator: Number of interventions performed by the Task Force.*

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
4.57	**5.00**		One Health	13	**1**	**0**	**22**
			Human	6			
			Animal	7			
			Environment	0			

87. INTEGRATION OF ESVAC AND ESAC DATA BASES

The records would be per sector but data would be available for both sectors, promoting a permanent holistic EMA/ECFDC/EFSA rationale. *Indicator: Being able to produce the antimicrobial footprint for each country and region.*

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.10	6.00		One Health	12	1	0	22
			Human	7			
			Animal	8			
			Environment	0			

88. FOCUS ON AMR IN FIELDS OF STUDY
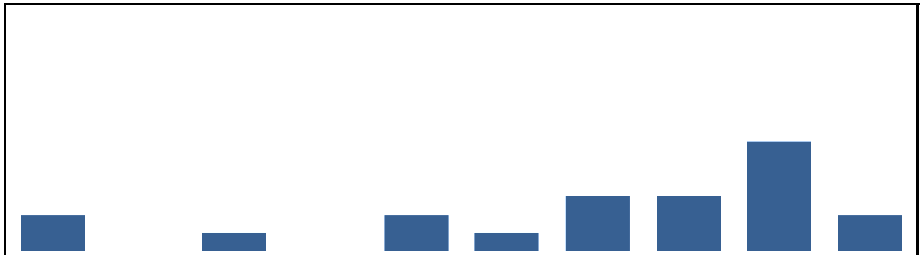
Strengthening of the topics AMR and ASP in fields of study: veterinary medicine, human medicine, care, pharmaceutical studies etc.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.11	8.00		One Health	13	3	0	22
			Human	7			
			Animal	7			
			Environment	0			

89. AUGMENTING AND IMPROVING PEDAGOGICAL CONTENTS OF UNIVERSITARY EDUCATION ON AMC/AMR, NAMELY FOR ALL RELATED COURSES

Either increasing contents AMC/AMR in the curricula of Medicine, Nursing, Pharmaceutical and Environment Sciences courses or creating new Disciplines on the topic inside those courses.
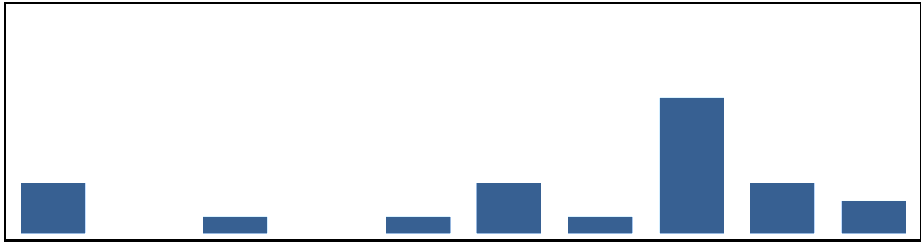
Indicators= Number of hours of mandatory education on AMC/AMR in the related courses; Number of hours of optional education on AMC/AMR in the related courses.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.00	**8.00**		One Health	13	**2**	**0**	**22**
			Human	7			
			Animal	6			
			Environment	1			

90. DEVELOP EDUCATION ON AMR IN THE INITIAL TRAINING OF HEALTH PROFESSIONALS

Include, if absent, courses on AMR in the initial training of agricultural engineer, agricultural school student, and student in the field of environment in order to have a better comprehension between the different sectors of AMR and share the core competencies to prevent and monitor AMR
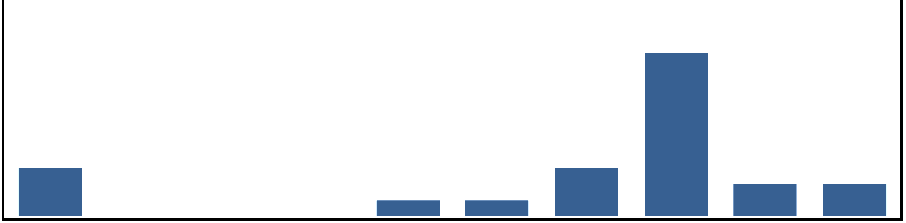
➜ Promote the development of those courses in the NAPs on AMR of EU member states.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.68	**8.00**		One Health	13	**0**	**0**	**22**
			Human	6			
			Animal	6			
			Environment	2			
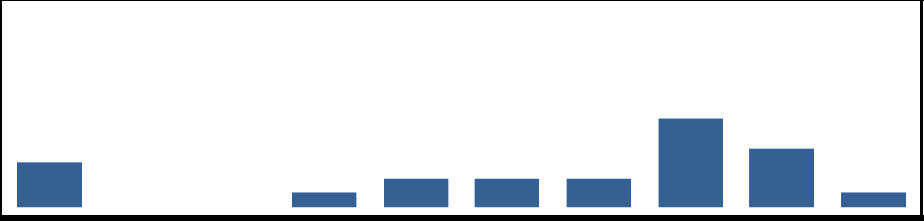
91. STRENGTHEN THE ISSUE OF AMR AS A PART OF THE ONE HEALTH IN THE CURRICULA OF THE AGRICULTURAL/FOOD HYGIENE OR FOOD TECHNOLOGY FACULTIES AND UNIVERSITIES EDUCATING RELEVANT PROFESSIONALS AND ITS INCLUSION INTO THE ACCREDITATION CRITERIA FOR HIGHER EDUCATION IN THE EUROPEAN HIGHER EDUCATION AREA (EHEA)

Develop and promote minimum learning outcomes for pre-/post-gradual students of agricultural, food hygiene and/or food technology faculties as well as other universities educating relevant professionals with respect to AMR as a part of One Health. Include the topic of AMR (One Health) into the accreditation criteria for those faculties.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.95	8.00		One Health	14	0	0	22
			Human	4			
			Animal	4			
			Environment	2			
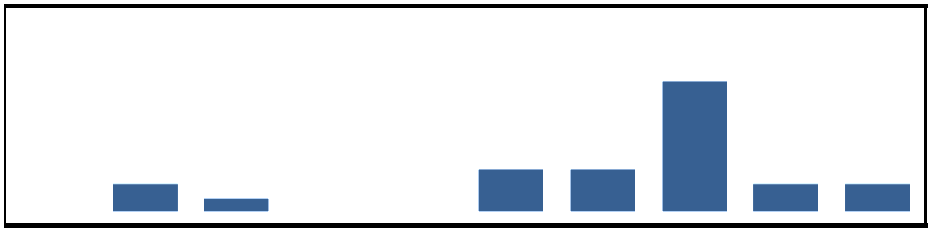
92. STRENGTHEN HUMAN RESOURCES CAPACITIES AND EDUCATION

Increase HR capacities by financing the training of AMR professionals through EU Cohesion and Structural funds, and by defining a minimum level of training for Human and Animal Health professionals on AMR.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.52	8.00		One Health	13	1	0	22
			Human	7			
			Animal	6			
			Environment	1			

93. IMPROVE KNOWLEDGE ON ANTIMICROBIALS CROSS-RESISTANCE WITH BIOCIDES
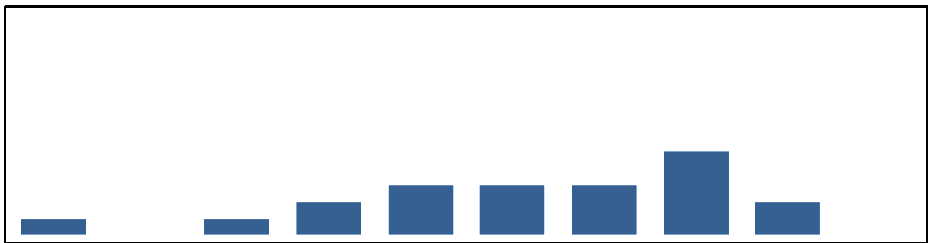
Extend the work of the JPI AMR on antimicrobials cross-resistance with biocides.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
7.09	**8.00**		One Health	10	**0**	**0**	**22**
			Human	6			
			Animal	6			
			Environment	3			

94. PROMOTE COOPERATION ON AMR BETWEEN EU AND EFTA COUNTRIES, AS WELL AS WITH OTHER EUROPEAN COUNTRIES AND, WHEN APPROPRIATE, MEDITERRANEAN COUNTRIES
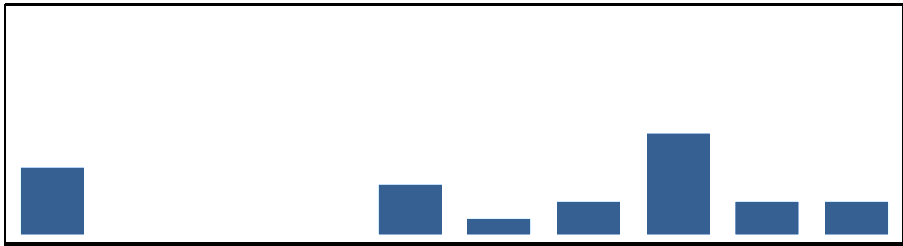
Non EU European countries should be included, when feasible, on AMR-related project, with the example of the CM AMR of the 7 march in France.

When appropriate, meeting with Mediterranean countries could also happen.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.20	**6.50**		One Health	15	**2**	**0**	**22**
			Human	5			
			Animal	4			
			Environment	2			
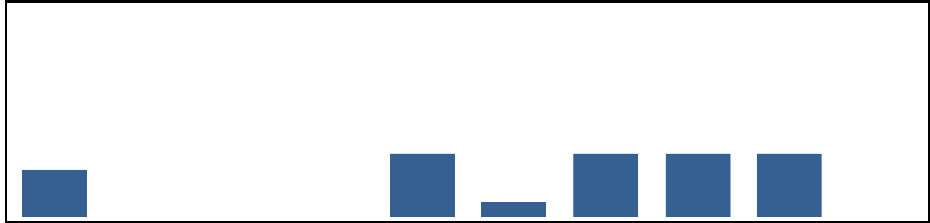
95. PROMOTE CROSS SECTOR COMMUNICATION BETWEEN THE DIFFERENT MINISTERS IN CHARGE OF HUMAN AND ANIMAL HEALTH, AND THE ENVIRONMENT REGARDING AMR

Promote the inclusion in the different NAPs on AMR of a need for regular meeting between the different ministers in charge and the creation of a "One Health" committee on AMR matters between the different ministerial actors.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.25	7.50		One Health	15	2	0	22
			Human	5			
			Animal	4			
			Environment	1			

96. PROMOTE THE EU'S ONE HEALTH APPROACH IN REGARDS TO AMR IN MULTILATERAL FORA AND IN EU INTERNAL POLICY

Promote the EU's "One Health" approach to AMR in multilateral fora, particularly those related to animal health or animal production (OIE, Codex alimentarius, FAO, etc.). Contribute actively to the work on AMR. Promote the provision of experts and knowledge within these organizations. The One Health approach should also apply to any health program at EU level, with the example of the EU4Health project not including animal or environmental health.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.25	7.00		One Health	16	2	0	22
			Human	4			
			Animal	4			
			Environment	1			

97. INCREASE MEDIA COVERAGE AND PUBLIC AWARENESS ABOUT AMR

Through the financing of public advertising in general media and communication campaign, the goal is to raise the awareness of the general population about the silent pandemic related to AMR and its danger. Indeed, the Covid crisis shows that with proper communication, a public health issue can attract the public attention and thus leads to the adoption of strong political measures.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.33	7.00		One Health	13	1	0	22
			Human	7			
			Animal	7			
			Environment	0			

98. ENCOURAGE CONSUMER PREFERENCE BEHAVIOUR IN FAVOUR OF FOODS OBTAINED WITH LESS RISK IN TERMS OF AMR

Strengthen the significance of the AMR topic / the responsible usage of antimicrobials in EU and national schemes of quality and sustainable production of food.
Engage Common Agricultural Policy and other relevant EU instruments to promote these processes as well as consumers understanding to such schemes.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.47	7.00		One Health	13	3	0	22
			Human	6			
			Animal	6			
			Environment	2			

99. OBJECTIVE ASSESSMENT OF THE OVERLAP BETWEEN VETERINARY MEDICINE AND HUMAN MEDICAL CARE IN TERMS OF AMR AND PUBLIC HEALTH RISKS

Support to conduct a robust epidemiological study aiming on:

· Microorganisms (pathogens, commensals) that pose a high risk to human medicine regarding AMR;

· Identification of their main sources (humans, animals, and environment), routes of spread and other risk factors (co-selection);

· Definition of appropriate indicators and targeted, properly prioritized measures to tackle risk management regarding

- Animals and the environment as a source of AMR for humans;
- Humans as a source of AMR for animals and the environment.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.91	**8.00**		One Health	13	**0**	**0**	**22**
			Human	7			
			Animal	7			
			Environment	1			

100. INDICATORS FOR FOOD SAFETY ASSESSMENT WITH REGARD TO AMR

Identify possible indicators of responsible use of antimicrobials in veterinary practices of food producing animals. Objectively assess costs/benefits. Introduce suitable indicators into practice considering local/national conditions too.

MEAN	MEDIAN	DISTRIBUTION	SECTOR		CNR	MISSING DATA	NUMBER OF REPLIES
6.65	**7.00**		One Health	13	**5**	**0**	**22**
			Human	3			
			Animal	8			
			Environment	0			

101. ADDITIONAL INFORMATION ON ANTIBIOTIC PACKAGES AND INFORMATION LEAFLETS

Evaluating the added value of displaying a pictogram meaning 'This is an antibiotic' on antibiotic packages, on antibiotic blisters and on antibiotic package information leaflets, as well as including clear messages highlighting the risk of antibiotic resistance, safe disposal practices and discouraging self-medication on the package leaflet.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.76	6.00		1	0	22

102. DEVELOP AND STRENGTHEN REAL-TIME SURVEILLANCE TOOLS AND COMMON EUROPEAN INDICATORS

Develop real time surveillance tools in order to collect high quality data on the use of antimicrobials (both quantity and appropriateness) and resistance to antimicrobials in human health.

The EU4Health programme could support this action. Data generated by those surveillance tools should be analyzed in a cross-sectorial way, when relevant.

The 2017 ECDC, EMA and EFSA common indicators on AMR and antimicrobial use should also be updated and expanded, and their active use should be ensured at national level. Those indicators should be associated with targets (relevant to the different national contexts).

➔ A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC to develop the common indicators on AMR and antimicrobial use. The 2017 ECDC, EMA and EFSA common indicators should be used as the basis for discussion.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		0	0	22

103. DEFINE INDICATORS OF AMR IN THE COMMUNITY

➔ Define indicators of AMR in the community;
➔ Organize surveillance of this new indicators through EARS-Net.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.14	7.00		0	0	22

104. DEVELOPMENT OF COMMON EUROPEAN GUIDELINES AND STANDARDS REGARDING AMR PROGRAMS

Develop common European guidelines and standards on different aspects of AMR programs e.g. Antimicrobial stewardship programs (hospital & community level), IPC programs.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.91	8.00		0	0	22

105. RECOMMENDATIONS

Develop harmonized EU guidelines.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.50	7.00		6	0	22

106. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS

Strengthen data collection and surveillance systems at EU level for AMR in hospital-acquired infections (HAI) and in the community through current funding programs. Continue improving data reporting and quality of data to EARS-Net and develop model for continuous monitoring and annual reporting of HAI and AMR in HAI (move from Point Prevalence Surveys every other to third year to stabile, continuous reporting via ECDC).

Continue to support the development and implementation of data collection and surveillance systems at EU level of antimicrobial use, including at more detailed level (hospital, department, speciality) through current funding programs and ESAC-Net. Granular, high quality data pave the way for future integrated monitoring systems that can combine emergence and spread of resistant bacteria with usage per "compartment". This will also enable setting more specific reduction targets for antimicrobial use in specific settings.
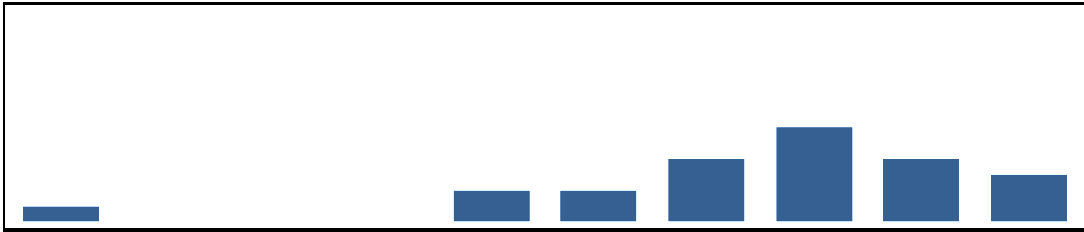
MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		0	0	22

107. IMPROVE AMC SURVEILLANCE

Progress on AMC surveillance in human sector:

·   Guarantee the implementation of a Surveillance system in sectors such as long-term care facilities.

·   Disaggregation of data by age groups (paediatric and >65 years) for comparison between countries.
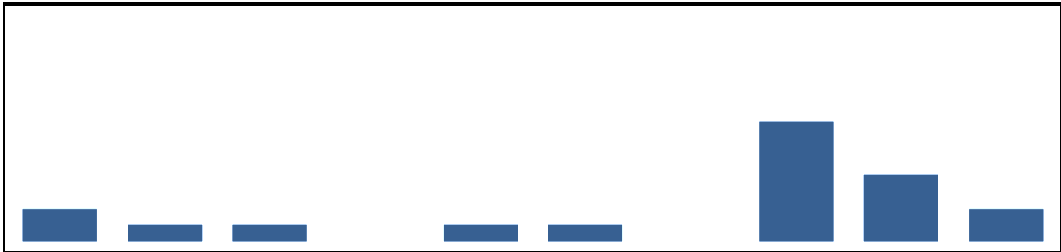
Agree on hospital consumption data indicators that allow comparison between them.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.50	8.00		0	0	22

108. DATA ABOUT AB CONSUMPTION

At a national level, there should be a deeper follow up, epidemiological analysis and publication of data regarding:
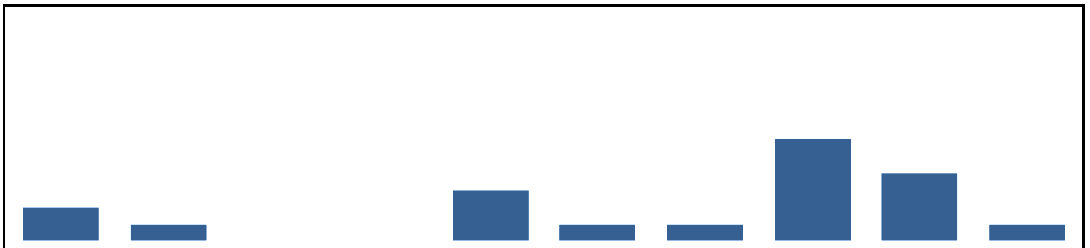
- The consumption of antibiotics in humans;

- The national presence of bacterial resistance to antibiotics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.84	8.00		3	0	22

109. SYNCHRONIZATION BETWEEN NATIONAL AND EUROPEAN DATA BASES ON AMC

This would be an enormous gain in process efficiency for submission of national data to ESVAC Net and ESAC Net, by considering a Unique Product Identifier provided by EMA.

Indicator: Successful implementation of the action.
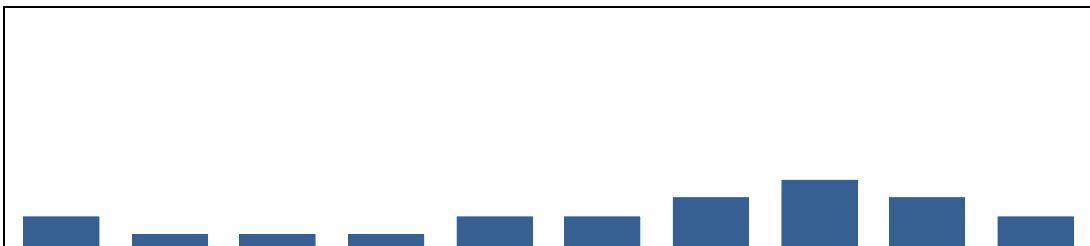
MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.63	8.00		3	0	22

110. SHARING OF DATA VISUALIZATION TOOLS LICENSE AND MAINTENANCE BETWEEN ECDC AND MS LIKE SURVEILLANCE ATLAS OF INFECTIOUS DISEASES

Allowing MS to benefit from the software in their own national surveillance systems but defining the periodicity and the indicators at local level.

https://atlas.ecdc.europa.eu/public/index.aspx
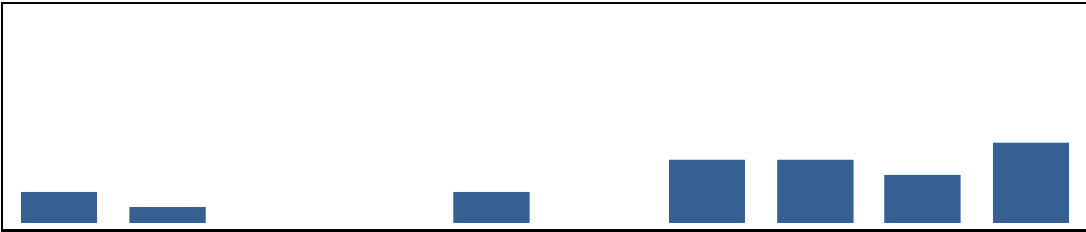
Indicator: Number of countries who subscribed this data visualization surveillance system and the number of countries with successful implementation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.33	7.00		1	0	22

111. DEVELOPMENT OF A UNITED DIGITAL SYSTEM FOR ANTIMICROBIAL RESISTANCE (AMR) DATA UPLOAD
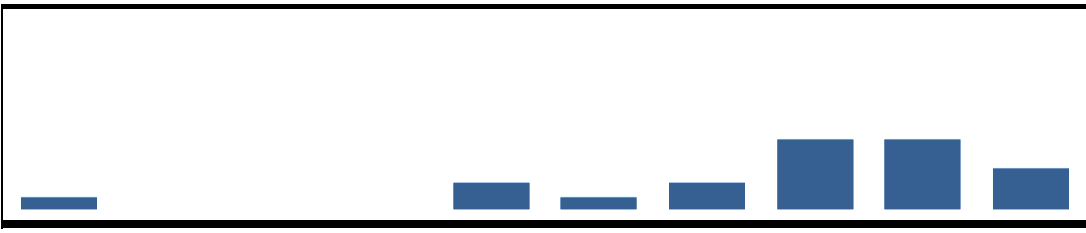
Digital system for antimicrobial resistance (AMR) data upload which could be used on laboratory level to ensure regular real-time monitoring and research of AMR and MDRO outbreaks.

• IT solutions needed;

• Laboratory specialist training needed on the digital database use;

• Data reporting incorporated in the requirements of laboratory quality standards.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.19	8.00		1	0	22
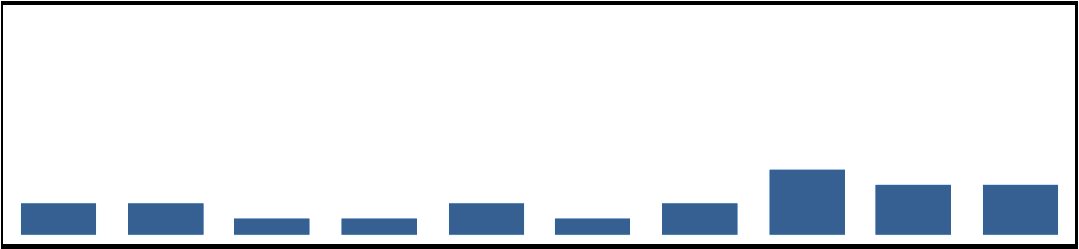
112. SURVEILLANCE OF AMR AND ANTIMICROBIAL CONSUMPTION SHOULD BE MANDATORY

Surveillance of AMR and antimicrobial consumption, according to a methodology defined by ECDC, should be made mandatory for member states and co-funding should be provided if needed. This should be included in the ECDC mandate.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.68	8.00		3	0	22
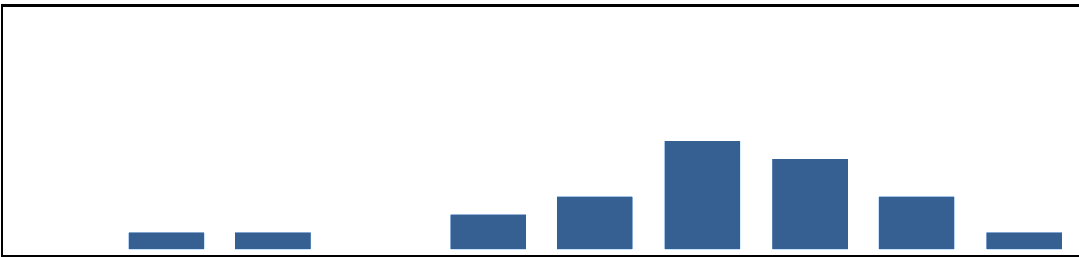
113. SURVEILLANCE ON PAN-SUSCEPTIBLE AND PAN-RESISTANT BACTERIA

ECDC should include surveillance of certain pan-susceptible bacteria (e.g. E. coli) as well as surveillance of all pan-resistant bacteria already included in ECDC surveillance, in all sectors (hospitals and outpatient setting). Member states should implement this at national level.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.29	7.00		3	0	22

114. EXPLORE INNOVATIVE METHODS REGARDING SURVEILLANCE

The ECDC should work with voluntary member states on innovative surveillance methodology addressing unmet needs for AMR, antimicrobial use, healthcare-associated infections, infection prevention and control practices and antimicrobial stewardship practices (e.g. new indicators, collection tools, real-time surveillance). These innovative surveillance modules, ideally collecting almost real-time data, should then be used by member states on a voluntary basis and reported to the ECDC. When possible, they might be implemented at a later stage at EU level.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.91	7.00		0	0	22

115. EXPLORE AND COLLECT ADDITIONAL DATA ON ANTIBIOTIC CONSUMPTION
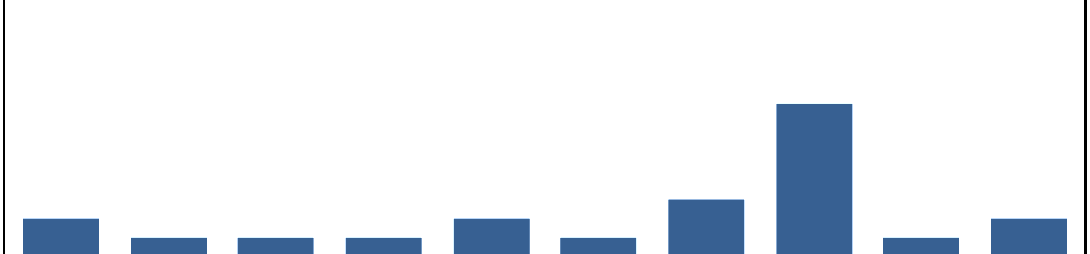
Antibiotic consumption is currently monitored at EU level using defined daily doses. As all units of measure have limitations, it is essential to allow voluntary member states to monitor antibiotic consumption using additional units of measure, in particular days-of-therapy and number of prescriptions. The ECDC should facilitate and coordinate such efforts, using a standardized methodology.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.67	8.00		1	0	22

116. STRENGTHENING LABORATORY CAPACITY AND IMPROVEMENT IN REPORTING THE MICROBIOLOGICAL RESULTS.
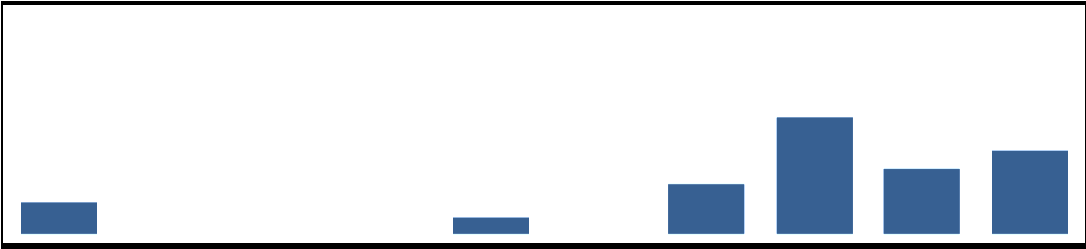
Recommendations and roadmap for strengthening laboratory capacity and improvement in reporting the microbiological results between the clinicians, especially if the laboratory is an outsourced service. Specific guidance from the institutions with good practice examples, including,
- Preliminary microbiological data reporting;
- Data digitalization tools.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.41	7.50		0	0	22
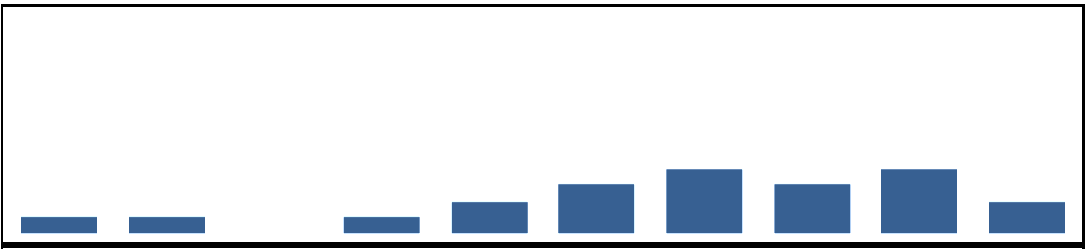
117. MONITOR ANTIBIOTIC CONSUMPTION AND APPROPRIATENESS IN ALL SECTORS

Data on antibiotic consumption (volume) and appropriateness should be available in all countries and in all sectors (primary care, nursing homes and hospitals), according to a standardized methodology defined by the ECDC.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.73	8.00		0	0	22

118. REGULAR BURDEN AND ECONOMIC ESTIMATES

Estimates of the burden and costs of antibiotic-resistant bacteria should be regularly calculated and reported at EU level (including data displayed at national level).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.81	7.00		1	0	22

119. REGULARLY REPEAT KNOWLEDGE, PERCEPTIONS AND ATTITUDE SURVEYS AMONG HEALTH PROFESSIONALS

The ECDC published such a survey in 2019. It should be repeated every 5-7 years.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.33	7.00		1	0	22

120. RECOMMENDATIONS ON THE REQUIRED SPECIALISTS IN MEDICAL INSTITUTIONS
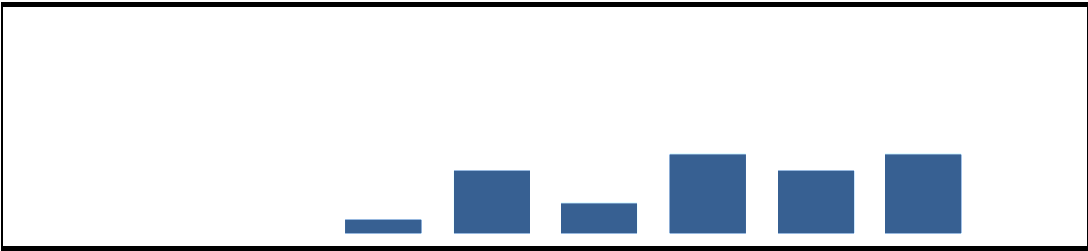
Provide a European level analysis and recommendations on the required specialists (e.g., AMS team members, infectious diseases consultants, microbiologists, clinical pharmacists, infection control nurses, clinical epidemiologists, etc.) in medical institutions depending on the number of beds, matching staffing to workload or other indicators that might facilitate diversion of the funding for the necessary specialist training and recruitment.

• Identifying AMS team as a quality indicator for a health care institution.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.55	8.00		0	0	22

121. SYSTEMATICALLY INCLUDE AMR-RELATED QUESTIONS IN EUROBAROMETER
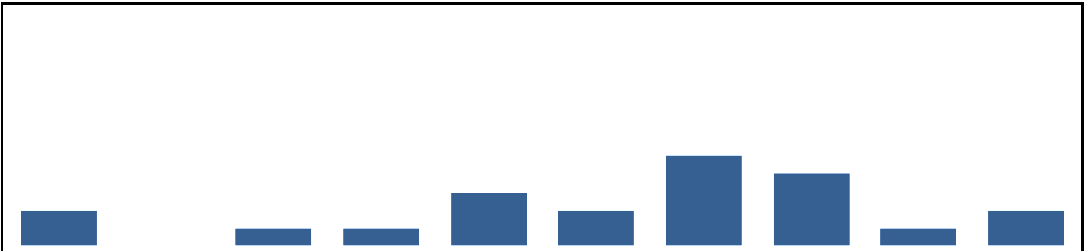
Eurobarometer questionnaires targeting the general public should systematically include a set of relevant AMR-related questions.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.05	7.00		1	0	22

122. COMPOSITE RESISTANCE INDEX AND AMR NAP SCORE
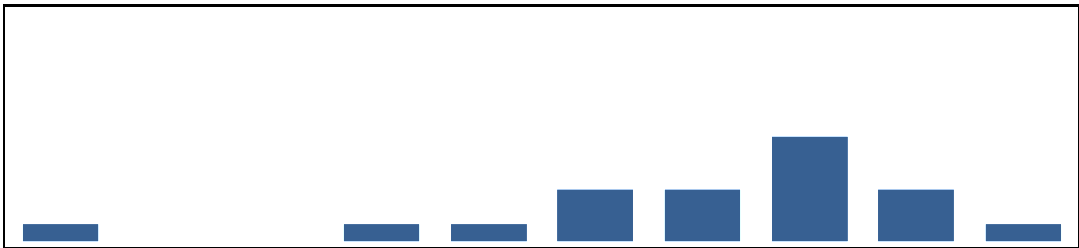
For simplicity and communication purposes (especially at policy-making level), ECDC should work on a standardized methodology, and then be in charge of collecting the data in all member states, regarding:
- A single composite resistance index, offering a snapshot of antibiotic resistance at national and EU level.
- A composite score summarizing the level of implementation of AMR NAPs in EU countries (taking defined indicators as a reference).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.29	7.00		1	0	22

123. FACILITATE ACCESS TO DIAGNOSTIC CODES

Linking information on antibiotic use and diagnostic codes at patient level in all sectors (outpatient, hospitals) is needed to allow automated calculation of quality indicators, reflecting appropriateness of antibiotic use at the patient and prescription levels. Very few countries have access to this data currently. The EC should facilitate this, in relation with existing or planned health data initiatives.
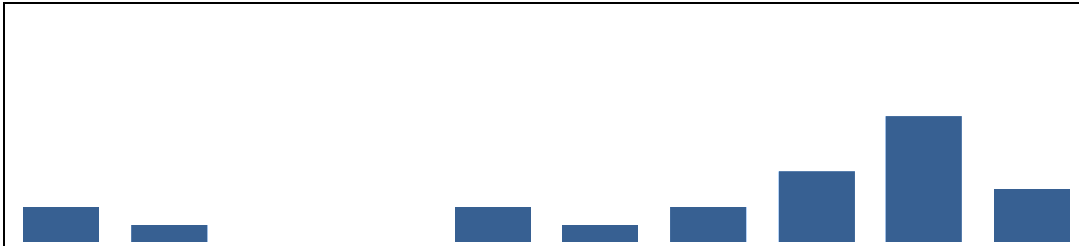
MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.05	8.00		3	0	22

124. DEVELOP EU STANDARDS TO BE USED AS A REFERENCE BY NATIONAL ANTIBIOTIC PRESCRIBING GUIDELINES

ECDC should develop EU standards (both for the outpatient and hospital settings), starting with the most common infections/syndromes, taking the 'ERS/ECDC Statement: European Union standards for tuberculosis care, 2017' as an example.

These principles / clinical pathways could be used as a reference by member states and guide the national antibiotic prescribing guidelines.

These standards would of course promote antibiotic stewardship principles.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.23	8.00		0	0	22

125. STANDARDIZED METHODOLOGY TO ASSESS THE RISK OF SELECTION OF ANTIBIOTIC RESISTANCE IN THE MICROBIOTA

All antibiotics (marketed in EU countries and the new ones) should be ranked based on evidence according to their respective risk of selection of antibiotic resistance in the microbiota. A standardized methodology should be defined. This would then be integrated in the EMA evaluation of antibiotics, prioritized in research programmes and could be used to inform antibiotic prescribing guidelines.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.20	8.00		2	0	22

126. SUMMARY OF PRODUCT CHARACTERISTICS

Regularly update the SPC of "old antibiotics" at the EU level to promote antibiotic stewardship (e.g. updated indicators, dosing, shortened durations of treatment).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.05	8.00		2	0	22

127. PRIORITIZE LONG-TERM CARE FACILITIES

Implementation/surveillance of AMR, antimicrobial use, healthcare-associated infections, infection prevention and control, as well as antimicrobial stewardship in long-term care facilities, in particular nursing homes should be prioritized (e.g. guidance, indicators; see the upcoming OECD report on the topic).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.55	8.00		0	0	22

128. SUPPORT THE IMPLEMENTATION OF MEASURES

Guidelines and standards, e.g. for IPC or the appropriate use of antimicrobials, are needed to combat AMR. However, these must also be implemented in order to be effective.

Various circumstances contribute to the fact that measures are not implemented. Therefore, different support mechanisms are conceivable:

➔ Exchange formats (see above);
➔ Research projects that examine, for example, which measures should be implemented with priority given limited financial resources available;
➔ Care should be taken to ensure that the needs of all MS are taken into account.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.84	8.00		3	0	22

129. INTRODUCTION OF MEASURABLE (REDUCTION) TARGETS

The effectiveness of measures against the inappropriate use of antimicrobials can only be assessed to a limited extent when indicators and measurable targets are lacking. Due to the different situations (in respective countries) with regard to AMR and antibiotic consumption in the individual countries, cross-country reduction targets are not very meaningful. Therefore, targets must be set at the national level (e.g.: general reduction, reduction of specific substances, guideline-compliant prescription). vMS should include targets in their national AMR strategies. Existing indicators (e.g. from ECDC) can be taken into account.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.45	8.00		0	0	22

130. INCREASE THE PATIENT SAFETY IN THE EU THROUGH STRENGTHENED INFECTION PREVENTION AND CONTROL (IPC) BY ADAPTING WHO GUIDELINES* TO THE EU CONTEXT (AS PROPOSED BY EU-JAMRAI) AND SUPPORT THEIR IMPLEMENTATION

By decreasing the number of infections, the use of antibiotics and hence the development of AMR is limited. Implementation of IPC guidelines is further key to limiting spread of already resistant bacteria within healthcare settings. An evidence-based and resourced strategy and implementation plan as well as continuous monitoring are necessary at national and local levels to ensure the implementation and compliance to existing and forthcoming guidelines. Insights into behaviour change needs to be integrated in the work to achieve an effective and sustainable implementation. * The *2016 WHO guidelines on Core Components of Infection Prevention and Control Programmes and the 2019 WHO Minimum Requirements for Infection Prevention and Control.*

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.73	8.00		0	0	22

131. CONSIDER PHARMACEUTICAL POLLUTION, INCLUDING AMR, IN UPCOMING REVISIONS OF EU LEGISLATION

In order to contain AMR in the environment, emissions to the environment should be minimised. There is now a window of opportunity to address this in upcoming revisions of several EU legislative acts.

The upcoming revision of the legislation on medicinal products for human use provides an opportunity to enhance the regulation of environmental aspects of medicinal products, including the spread and development of AMR in the environment. For example, the environmental effects should be considered in the risk-benefit analysis in the authorisation process, without compromising the patient's health.

The upcoming revision of the Industrial Emissions Directive and the Urban Wastewater Directive could be used to take action against pharmaceutical pollution, including from AMR, within the European Union.

Further, in order to tackle emissions from production in third countries, the introduction of environmental requirements with respect to antimicrobials in the legislations related to production of active substances and medicinal products for human use and the Good Manufacturing Practices (GMPs) should be considered, taking into account potential effects on availability. This would enable to set emission and discharge limit values for production.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.90	8.00		1	0	22

132. MAKE THE EUROPEAN HEALTH INDUSTRY MORE RESILIENT AND DEVELOP OPEN STRATEGIC AUTONOMY IN AMR FIELD

Launch of a health Important Project of Common European Interest (IPCEI) to support the following AMR-related actions:
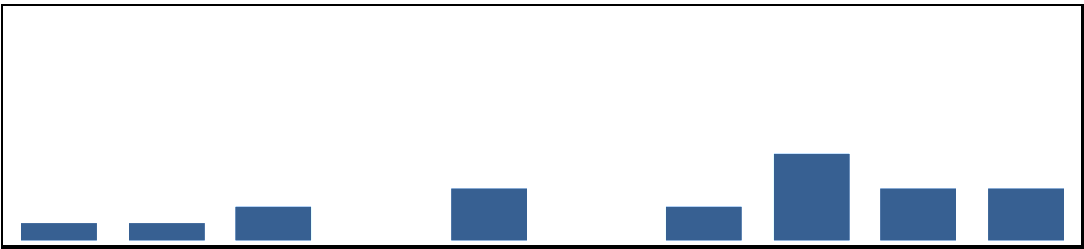
➔ Address health market failures for products tackling AMR
➔ Strengthen the value chain in the health sector for antimicrobials
➔ Support the development of health innovations tackling AMR

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.60	8.00		2	0	22

133. ACCESSIBILITY OF ANTIMICROBIALS
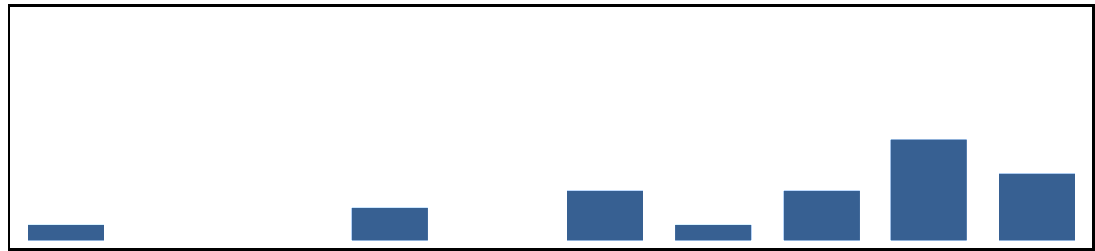
Ensure stable and facilitated accessibility of antimicrobials for improving the feasibility of emergency treatment by guaranteeing supplies if there is no immediate alternative and by bridging the period until a Member State can purchase its own antimicrobials, especially for restricted, "last-line" antimicrobials.

• Foundation of an institution that is created and regulated internationally in European or regional level (for example, as the Vaccine banks).

• Establishing contracts that include possible clauses for direct purchase by beneficiary countries or by international organisations and partners.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.75	8.00		2	0	22

134. FACILITATES UNIT DOSE DISPENSING OF ANTIBIOTICS ACROSS THE EU
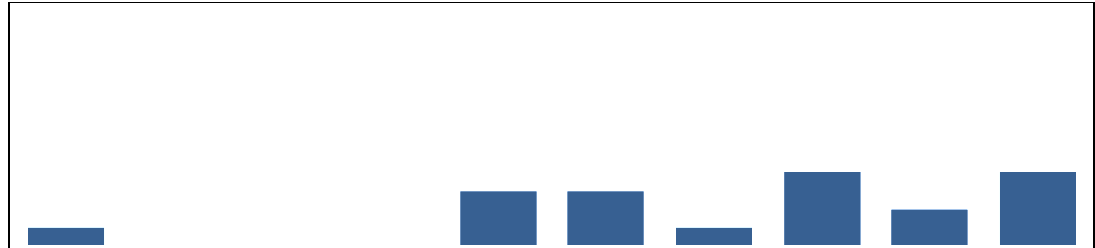
Facilitate unit dispensing of antibiotics across the EU, as recommended in the 2017 EU AMR One Health action plan, thanks to the support of the EU4Health work program and the 2020 EU pharmaceutical strategy. The EMA should also be mandated by the European Commission to work on this.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.60	8.50		2	0	22

135. IMPROVE PREPAREDNESS AND RESPONSE TO SERIOUS CROSS-BORDER THREATS IN THE AREA OF MEDICAL COUNTERMEASURES (AND INCLUDE AMR IN THE SCOPE OF ACTIVITIES)

The Health Emergency Preparedness and response Authority (HERA) represents an important tool for addressing the challenge of antimicrobial resistance.

➔ Ensure the sufficient supply of the relevant medical countermeasures (MCMs) and develop new countermeasures against existing, emerging or unknown pathogens and cross-border threats.

➔ Implement appropriate operational, funding and support mechanisms to bring and maintain new and old-AMR-related MCMs on the market.

➔ In synergy with Horizon Europe partnerships, in the field of science and clinical research, enhance public-private cooperation and partnerships.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.28	8.00		4	0	22

136. HERA NEW AB

Provide clarity on the role HERA in advancing the development of novel antimicrobials. Take lessons from Covid-19 and ask HERA to develop a work plan for the implantation of practical measures to counter market failure in the development of novel antibiotics, new procurement models and pull incentives.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.63	8.00		3	0	22

137. ENHANCE PUBLIC AWARENESS OF AMR AND PRUDENT USE OF ANTIBIOTIC THROUGH COMMON COMMUNICATIONS CAMPAIGN

Identify 5 key messages to promote AMR and AMS, and support and support Member State to promote at national level in culturally appropriate way in line with the national messages on AMR in each Member State.

Include questions on AMR in Health Eurobarometer survey.

Monitor and report on public awareness and understanding of AMR using common questions.

The UE4Health program could support this action.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.10	8.00		1	0	22

138. SUPPORT EDUCATIONAL TOOLS ON AMR, BOTH FOR CITIZENS AND PROFESSIONALS IN HUMAN, ANIMAL AND ENVIRONMENTAL HEALTH, SUCH AS THE E-BUG TOOL

Conduct a scoping exercise to ascertain what type of resources would be required. Develop an EU wide communication campaign to provide signposting to online educational tools. Engagement with professional training bodies to agree on an approach. A media campaign to advertise the educational tools. Funding could be made available through the EU4Health program with funding available to tackle AMR across the EU to train the health workforce.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.29	8.00		1	0	22

139. ENSURE THAT MEMBER STATES ARE BETTER AWARE OF THE DIFFERENT FUNDING OPPORTUNITIES THAT THE EU CAN PROVIDE ON AMR

Enhanced communication campaigns targeting key stakeholders in each Member States.

Create supportive materials and advice center for queries to facilitate Member States to access and receive help regarding the drawdown of EU funding.

Standardise drawdown of funding and reporting to increase transparency across projects.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.67	7.00		1	0	22

140. PREVENTING DEVELOPMENT AND SPREAD OF INFECTIOUS DISEASE

Improve infection prevention and control (IPC) in human health. The knowledge gained from the covid-19 pandemic should be used to improve general IPC measures, particularly at all levels of healthcare, in hospitals as well as in long-term care facilities and home care, where patients and residents are particularly vulnerable to infections, including resistant infections. In addition, basic hygiene should be promoted also in community settings. Common EU standards, guidelines, or if possible legislation, should be developed regarding:

→ Common definitions of minimum criteria for training within medical specialties responsible for IPC;

→ Common standards for utilization of IPC specialists in non-hospital facilities, e.g. long-term care facilities;

→ Mandatory surveys and reporting of health care-associated infections in long-term care facilities and similar settings.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.18	8.00		0	0	22

141. SUPPORT COUNTRIES IN DEVELOPING ATTAINABLE/MEASURABLE GOALS REGARDING ANTIMICROBIAL CONSUMPTION AND AMR

Expert help to Member States so that each country can define realistic goals, which are appropriate to the current country situation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.05	8.00		0	0	22

142. MOVING FROM STRATEGY TO IMPLEMENTATION BY SETTING UP PILOT STUDIES IN MEMBER STATES FOR EVALUATING NOVEL APPROACHES AND BUILDING THE BUSINESS CASE FOR CHANGE

Set up pilot studies in MS for evaluating novel approaches, for example:

- Impact of dispensation of antimicrobials per exact number of units required for the treatment
- Impact of specific labelling "This is an antibiotic – pictogram"
- Impact of the use of rapid diagnostic tools

The EU4Health program could support this action.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.15	7.00		2	0	22

143. REFORM HEALTH TECHNOLOGY ASSESSMENT PROCESSES

Current Health Technology Assessment (HTA) processes do not recognize the full value of antibiotics and vaccines or their contribution to our overall healthcare infrastructure. Reform to HTA processes is needed to ensure the antimicrobial marketplace is more sustainable and patients can access the most appropriate antimicrobials and vaccines.

https://www.valueinhealthjournal.com/action/showPdf?pii=S1098-3015%2821%2901590-4

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.13	7.00		7	0	22

144. STRENGTHEN EDUCATION ON AMR

Encourage training, awareness and information campaigns for behaviour changes in prescribers sectors, use of rapid diagnostic techniques in order to reduce the unnecessary prescription of antibiotics and sensitize prescribing groups to limit the use of antibiotics considered critical.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.18	8.00		0	0	22

145. TRAINING OF HEALTH CARE PROFESSIONALS, INCLUDING MEDICAL DOCTORS, IN THE COURSE OF THEIR STUDIES

Include, during the studies of medical doctors and nurses, the topic of AMR /hand hygiene.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.23	8.00		0	0	22

146. TRAINING OF HEALTH CARE PROFESSIONALS, INCLUDING MEDICAL DOCTORS, DURING THEIR PROFESSIONAL ACTIVE YEARS

Put in place continuous learning for health care professionals, and specifically on the topic of AMR.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.27	8.00		0	0	22

147. PRE- AND POSTGRADUATE EDUCATION AND TRAINING

Develop EU criteria on the level of knowledge for human doctors and nurses on infection hygiene and control.

Mandatory education in IPC on pre- and postgraduate level of all medical and nursing students/residents

Mandatory courses in IPC in the curriculum of nurses and other health care professionals

Develop guidelines for pharmacists on the use of antibiotics and correct disposal of medical waste.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.55	8.00		0	0	22

148. CONSISTENT CURRICULUM FOR HYGIENE PROFESSIONALS

Develop a consistent national curriculum for the training of hygiene professionals in hospitals.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.86	8.00		1	0	22

149. ABSTEWARDSHIP

Allow more funding and human resources for the implementation of a national ABstewardship.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.95	9.00		1	0	22

150. HIRE SPECIALISTS IN HOSPITALS

In each hospital, there should be at least one Medical Doctor specialized in infectiology on a mandatory basis.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.19	9.00		1	0	22

151. LEGAL BASIS (EU)

Develop a legal basis for the report of AMR indicator pathogens, Antimicrobial Stewardship and Antibiotic Use.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.24	8.00		1	0	22

152. LEGAL BASIS (NATIONAL)

Develop a legal basis for the report of AMR indicator pathogens, Antimicrobial Stewardship and Antibiotic Use.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.40	8.00		2	0	22

153. STUDY CORRELATION BETWEEN INDICATION AND PRESCRIPTION

Conduct scientific study on the correlation between indication and prescription of antimicrobials regularly.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.60	7.50		2	0	22

154. ASP IN PRIVATE PRACTICE

Development and strengthening of antibiotic stewardship in private practice.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.26	8.00		3	0	22

155. STRENGTHEN THE STATUS OF IPC IN ALL HOSPITALS

Implement an IPC specialist and at least a full equivalent IPC nurse plus substitute in each hospital.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.24	8.00		1	0	22

156. INCREASE THE EFFICIENCY OF THE IPC TEAM

Full implementation of the WHO competencies into the IPC work particularly the management components plus appropriate staffing according the allocated work.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.33	8.00		1	0	22

157. STRENGTHEN IN ALL LONGTERM CARE FACILITIES

Establish an IPC team in each ICTF with the structural and remunerated support of an IPC specialist.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.18	8.00		0	0	22
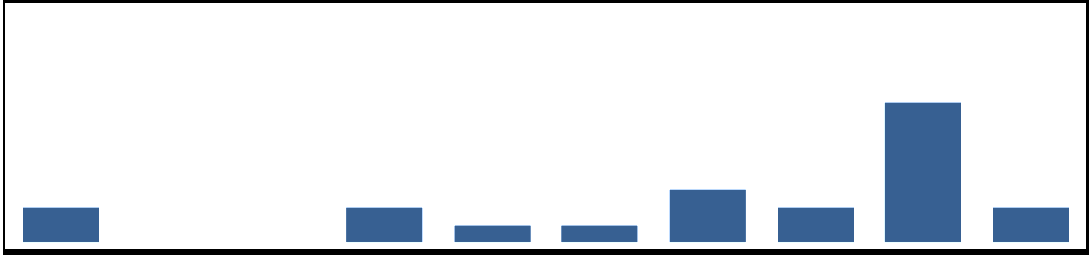
158. ESTABLISH A STRUCTURED COMMUNICATION BETWEEN IPC AND ASP TEAMS

Preparation of draft of internal regulations.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.40	8.00		2	0	22
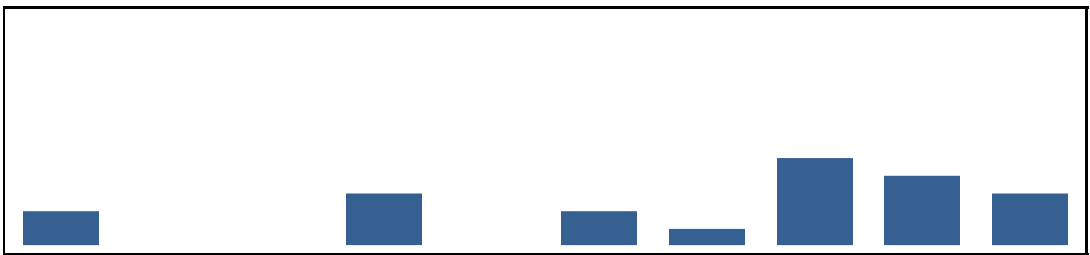
159. ASSIGN ALL HOSPITALS FOR PROVISIONING OF STRUCTURED DATA FOR THE AUTOMATIC SURVEILLANCE OF HEALTHCARE-ASSOCIATED INFECTIONS

Data for the surveillance of healthcare-associated infections and AMR must be available in a structured and defined formate for easy allocation and exchange - particularly for epidemics and pandemics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.14	8 .00		1	0	22

160. ASSIGN ALL HOSPITALS FOR PROVISIONING OF STRUCTURED DATA FOR THE AUTOMATIC SURVEILLANCE OF AMR
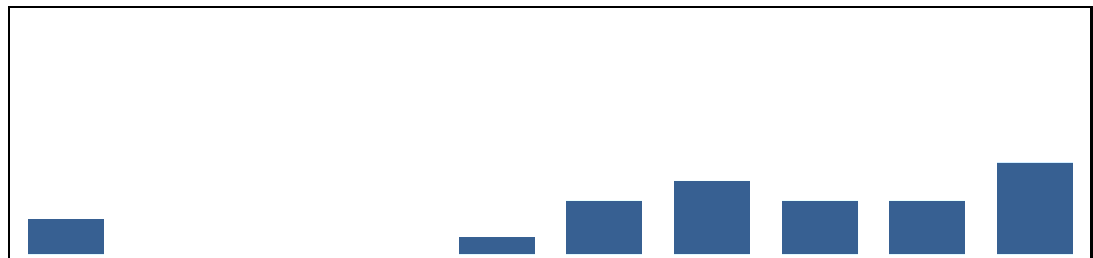
Data for the surveillance of healthcare-associated infections and AMR must be available in a structured and defined formate for easy allocation and exchange - particularly for epidemics and pandemics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.95	8.00		2	0	22

161. PROMOTE R&D

Promote research in human health on:
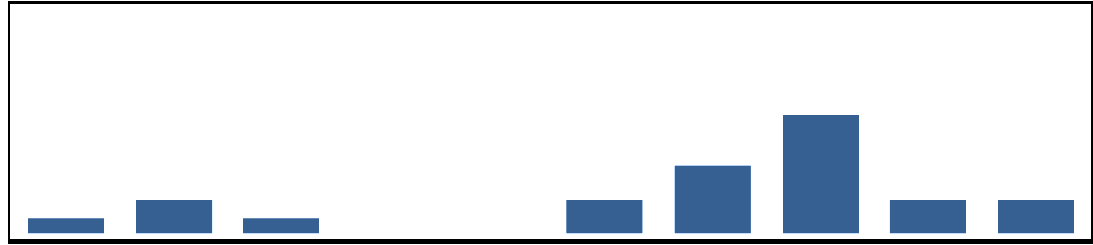
· Rapid diagnostics tests.

· Surveillance and IPC

· Cross studies in AMC and AMR and evolution.

· Epidemiology or multi resistant bacteria.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.33	8.00		1	0	22

162. DEVELOP AND IMPLEMENT GOOD PRACTICES GUIDELINES IN PROPHYLAXIS AND COLLECTING PATHOGEN SAMPLES FOR IDENTIFICATION

Develop a reference document to:

· Define actions aimed at fostering a preventive attitude in the use of antimicrobials, and when to use them.

· Define where, how and when to collect samples to identify possible pathogens causing infection.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.76	8.00		1	0	22

163. REVIEW SUMMARY PRODUCT CHARACTERISTIC (SPC) FROM OLD ANTIBIOTICS

Adapt recommendations of old antibiotics based on evidences and clinical guidelines from studies since their commercialization. This will ensure and optimize their correct use.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.10	8.00		2	0	22

164. CONSENSUS IN MINIMUM KNOWLEDGE ON AMR

Common minimum and obligatory European training in AMR in for every healthcare professionals from every speciality or career (i.e.: nurses, doctors and pharmaceutics).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.82	8.00		0	0	22

165. SUBGROUP ON SUPERVISORY BODIES

Establish a network of supervisory bodes on human health as a driving force for implementation of National Action Plans on AMR. This network is to be included as a subgroup of the One Health Network AMR.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.52	5.00		1	0	22

166. STEWARDSHIP HOSPITALS

Include in the EU Action Plan and in NAP mechanisms and develop tools to facilitate infection prevention in health care institutions specially AB stewardship in hospitals.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.60	8.00		2	0	22

167. LONG-TERM HEALTHCARE FACILITIES

Include in the EU Action Plan and in NAP long-term healthcare, especially stewardship programs in elderly health and other health care institutions and develop EU mechanisms and tools to facilitate its implementation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.57	8.00		1	0	22

168. USE AM IN HUMAN SECTOR

Include in the EU Action Plan and NAP the prioritize prudent use of AMR in primary care and the use of diagnostic tools and develop EU mechanisms and tools to facilitate its implementation (e.g. guidelines).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.11	8.00		3	0	22

169. FINANCING OF SURVEILLANCE INFORMATION SYSTEMS ABLE TO GATHER HCAI, AMR AND AMC DATA IN EACH COUNTRY

Gathering information regarding HCAI, AMC and AMR is fundamental for cause analysis and planning of quality improvement interventions.

Indicator: Number of EU countries with this kind of surveillance information system implemented.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.24	8.00		1	0	22

170. EU DIRECTIVE DEFINING THAT THE ELECTRONIC PRESCRIPTION SYSTEM SHOULD MAKE THE RECORD OF THE CONFIRMED OR SUSPECTED DIAGNOSIS AS A MANDATORY STEP FOR ANTIMICROBIAL PRESCRIPTION

These would be fundamental for the implementation of quality indicators – and not only quantitative indicators - in the area of antimicrobial prescription

Indicator: number of countries in which the electronic prescription system respects this recommendation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.60	9.00		2	0	22

171. PROMOTE PULL INCENTIVES FOR DEVELOPING NEW ANTIBIOTICS AND GUARANTYING THEIR SUPPLY AFTER LAUNCH

European negotiations for pull initiatives for new antibiotics
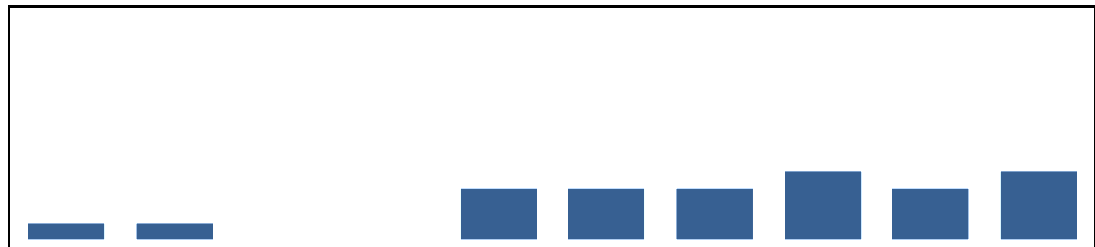
➔ An EU 'pull' incentive in the form of transferable exclusivity extension (TEE) would be the appropriate and valuable tool to incentivize antimicrobial R&D;

➔ A subscription model could contribute to sustain the ecosystem and promote stewardship as it decouple revenues from volume sold.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.42	8.00		3	0	22
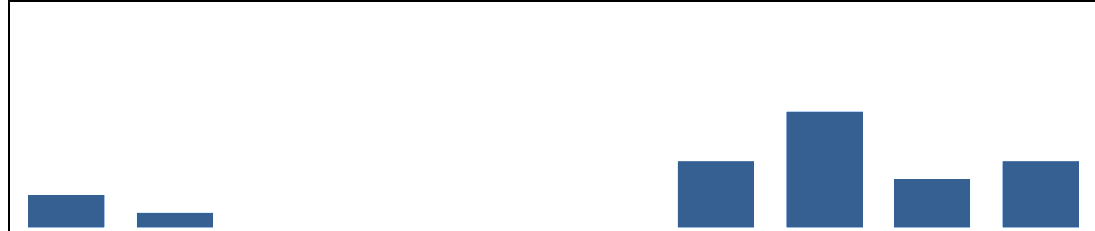
172. INTENSIFYING CONNECTION BETWEEN AMR POLICY AND ANIMAL HEALTH AND ANIMAL WELFARE LEGISLATION

Breeding and husbandry of animals need to change in order to sustainably improve animal health, which is necessary to further reduce antimicrobial use in livestock without creating animal welfare problems due to untreated infectious diseases.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.09	7.50		0	0	22
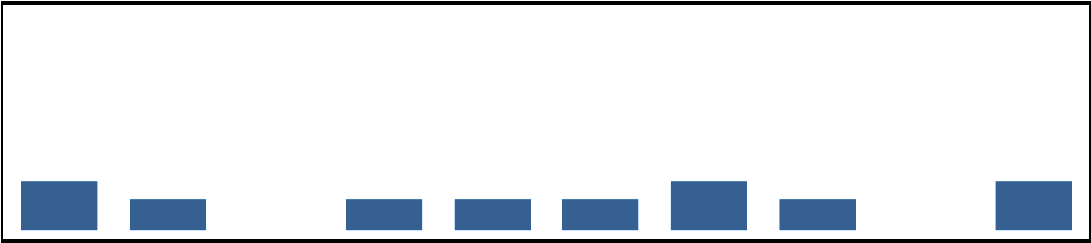
173. DEVELOP COMMON EU INDICATORS AND MEASURABLE GOALS ON THE USE OF ANTIMICROBIALS AND ON ANTIMICROBIAL RESISTANCE

Develop common EU indicators and measurable goals on the use of antimicrobials and on antimicrobial resistance, notably by updating and strengthening the 2017 ECDC, EMA and EFSA indicators and ensuring their active use at Member State level while ensuring that the objectives are differentiated according to the different national contexts.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.38	8.00		1	0	22
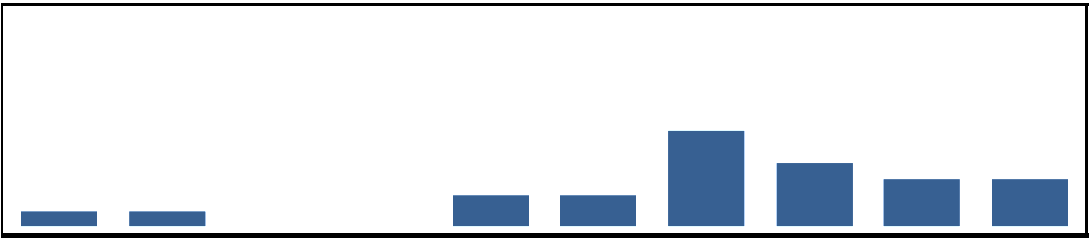
174. PUTTING IN PLACE OBJECTIVES TO ACHIEVE IN TERMS OF CONSUMPTION OF AB

The data about the quantities of AB used should be monitored. Indicators of the quantity of association of antibiotics /bacteria could be set as objectives to achieve.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.47	6.00		2	1	21

175. DEVELOP AND USE QUALITY INDICATORS OF ANTIBIOTIC CONSUMPTION (SALES/USE)

Indicators of quality of consumption, for example proportion of antibiotic for group treatment of total, proportion of narrow spectrum antimicrobials of total or similar based on already existing data and visualize these and existing indicators graphically to illustrate progress over time (years).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.09	7.00		0	0	22

176. DEVELOP AND STRENGTHEN REAL-TIME SURVEILLANCE TOOLS AND COMMON EUROPEAN INDICATORS

Develop real time surveillance tools in order to collect high quality data on the use of antimicrobials (both quantity and appropriateness) and resistance to antimicrobials in animal health (EARS-Vet). Regulations (EU) 2019/6 on veterinary medicinal products and regulation (EU) 2016/429 on transmissible animal diseases could support this action. Data generated by those surveillance tools should be analyzed in a cross-sectorial way, when relevant. The 2017 ECDC, EMA and EFSA common indicators on AMR and antimicrobial use should also be updated and expanded, and their active use should be ensured at national level. Those indicators should be associated with targets (relevant to the different national contexts). → A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.55	7.00		0	0	22

177. DEVELOP AND STRENGTHEN REAL-TIME SURVEILLANCE TOOLS AND COMMON EUROPEAN INDICATORS

Develop real time surveillance tools in order to collect high quality data on the use of antimicrobials (both quantity and appropriateness) and resistance to antimicrobials in animal health (EARS-Vet). Regulations (EU) 2019/6 on veterinary medicinal products and regulation (EU) 2016/429 on transmissible animal diseases could support this action. Data generated by those surveillance tools should be analyzed in a cross-sectorial way, when relevant. The 2017 ECDC, EMA and EFSA common indicators on AMR and antimicrobial use should also be updated and expanded, and their active use should be ensured at national level. Those indicators should be associated with targets (relevant to the different national contexts).

➜ A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC.
  - Development of the Guide to Good Practice in the Determination of Antimicrobial Susceptibility of Microorganisms Isolated from Animals. The guide should contain the most important definitions and rules for the use of susceptibility testing methods in veterinary practice and, above all, the clinical criteria for interpreting the results.
  - Development of guidelines for the use of antibacterial drugs in animals, taking into account:
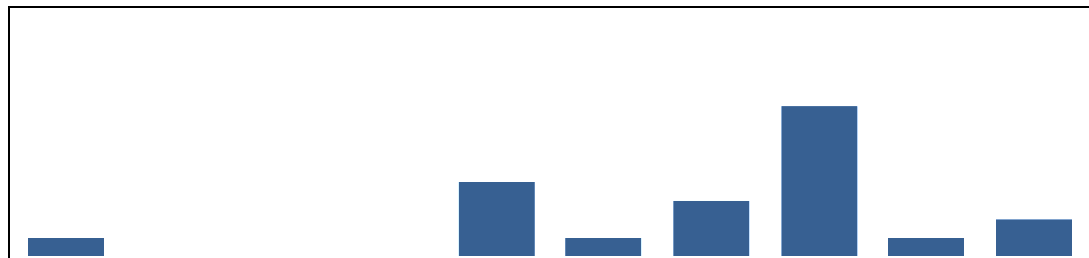
Animal species, routes of administration, therapeutic indications, drugs authorized in a given country. Indications of first-line and second-line drugs.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.28	8.50		4	0	22

178. DEVELOP INDICATORS OF AMU TAKING INTO ACCOUNT THE SPECIFICITY OF REGIONS, SPECIES, TYPE OF ANIMAL PRODUCTION, HUSBANDRY, ETC
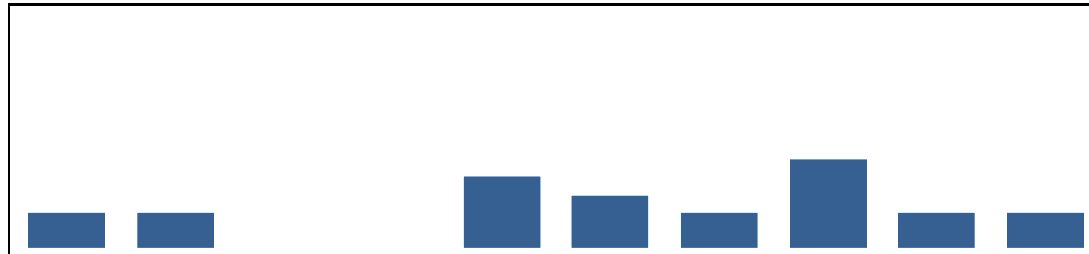
The diversity of production models in Europe leads to the need of more specific indicators of AMU that take into account the regions, the species, type of animals, as well the method of production and husbandry, etc.

· Within the framework of the application of regulation 2019/6, which establishes an annual monitoring of AMR indicators by the EMA, support the development of these new OH indicators within the framework of the ESVAC report.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.05	8.00		1	1	21

179. CONTINUOUS OVERVIEW OF PROGRESS WITH REGARD TO REDUCTION OF INAPPROPRIATE ANTIBIOTIC CONSUMPTION (SALES/USE)

Continuous overview of progress in relation to "Recommendations to the Member States as regards their strategic plan for the Common Agricultural Policy (COM (2020) 846 final)" and the associated country specific recommendations with regard to reduction of antibiotic sales (50% reduction by 2030 as stated in the F2F strategy).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.18	6.50		0	0	22

180. MAINTAIN THE AVAILABILITY OF OLDER, NARROW SPECTRUM ANTIBIOTICS IN THE EUROPEAN VMP MARKET

Change article 106(1) in the VMP regulation (EU) 2019/6.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.37	7.00		2	1	21

181. EXAMINE ISSUES WITH AVAILABILITY OF FIRST-LINE ANTIMICROBIALS

Examine how the pharmaceutical industry can be incentivised to licence and produce lower priority antimicrobials in all necessary formulations to ensure prescribing vets have options to treat infections that are expected to respond to category D AMs (AMEG) wit first line products rather than selecting AMs from a higher priority category due to lack of treatment options

➔ Products can be discontinued if the cost-benefit analysis is unfavourable;

➔ Market supports may be necessary to keep certain products/ formulations on the market.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	9.00		0	0	22

182. ENHANCE AVAILABILITY OF MINOR SPECIES TREATMENTS

Improve the availability of veterinary medicines and alternatives mainly in minor species:

➔ Involve the pharmaceutical industry;

➔ Encourage with economic resources the research of new antibiotics or alternatives in minor species.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.29	8.00		1	0	22

183. CONTINUOUS SHARING BEST PRACTICES

Continuous sharing best practices for instance regarding implementation of article 107 point 3-4 in Regulation (EU) 2019/6, within the framework of AMR One Health Network.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.48	8.00		1	0	22

184. SURVEILLANCE OF ANTIBIOTIC RESISTANCE IN BACTERIAL PATHOGENS IMPORTANT FOR ANIMAL HEALTH

Surveillance of antibiotic resistance in bacterial pathogens important for animal health in EARS-vet.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.25	9.00		1	1	21

185. BASE LINE STUDIES AMR

Prioritization of conduction base line studies on other products than meat like fish, and food of non-animal origin for monitoring AMR in zoonotic and commensal bacteria.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.81	7.00		1	0	22

186. GUIDELINES IMPORT CONTROLS

Development of European guidelines for the harmonization of import controls, including the new requisites of art 118 of the Veterinary Medicines Legislation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.24	8.00		1	0	22

187. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS

Increase coverage and representativeness of surveillance of antimicrobial resistance in animal pathogens with, among others; focus on resistance against critically important antibiotics for human health. Agree upon standardised EU clinical breakpoints/epidemiological cut off values for resistance in animal pathogens. Improve and harmonise laboratory methods, etc.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.57	8.00		1	0	22

188. PROMOTE HARMONIZED MONITORING OF AMR OF ANIMAL PATHOGENS AT EU LEVEL

There is an urgent need for harmonized and coordinated approach for AMR surveillance in bacterial pathogens of animals across Europe.

➔ Provide European guidance for developing surveillance system of AMR in animals;
➔ Provide financial support to Member States for implementing this monitoring;

This action could be supported through the establishment of EARS-Vet.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		0	0	22

189. IMPROVE AMC SURVEILLANCE

Support MS on improving the antibiotic consumption monitoring system in animal sector by:

· Comparing the data obtained from prescription, use and sales of veterinary antibiotic
· Carrying out comparative studies of the consumption of critical antimicrobials among livestock populations with a similar productive orientation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.63	8.00		2	1	21

190. BETTER MONITORING OF AMR

Development of a European Antimicrobial Resistance Surveillance network in Veterinary medicine (EARS-Vet), in order to fill the current surveillance gap in diseased animals in Europe and complement the existing EFSA and EARS-Net monitoring. Among others, EARS-Vet would help: i) to support the development of evidence-based guidelines for antimicrobial stewardship in veterinary medicine, ii) to better characterize links between AMC and AMR in animals and iii) to support risk assessment of AMR transmission from animals to humans via non foodborne related routes. Overall, EARS-Vet would contribute to a much stronger One Health strategy for AMR surveillance in Europe.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		0	0	22

191. SUPPORT THE DEVELOPMENT OF A EUROPEAN NETWORK OF AMR SURVEILLANCE IN DISEASED ANIMALS

Support the development of the European Antimicrobial Resistance Surveillance network in Veterinary medicine (EARS vet) by the EFSA.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.60	8.00		2	0	22

192. SURVEILLANCE OF AMR IN DISEASED ANIMALS

Support the development of the European network of AMR surveillance in diseased animals (EARS-Vet) in the upcoming joint action on AMR and healthcare-associated infections. Support further development of this system for the future to generate pharmacodynamics data for establishing of veterinary clinical breakpoints.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.50	8.00		2	0	22

193. MONITORING SYSTEM FOR AMR
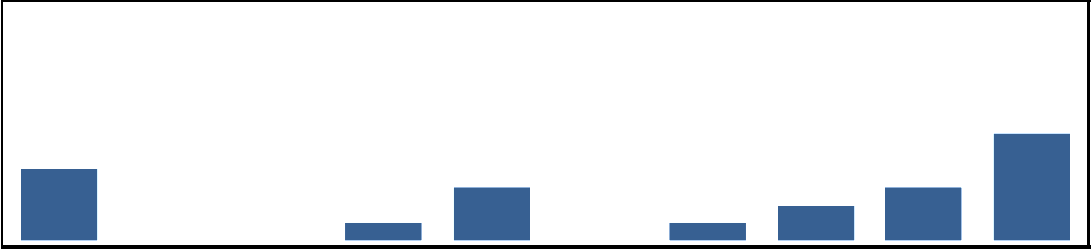
Develop a harmonized European system for monitoring AMR in pathogenic bacteria in animals, which allows all MS to obtain information in collaboration with all interested parties. The data generated could be used to:
· Estimate the burden of antimicrobial resistance in food and companion animals;
· Obtain epidemiological cut-off values;
· Support the risk assessment of antimicrobial resistance;
· Improve the administration of antimicrobials in animals;
· Be consulted by the veterinary profession.
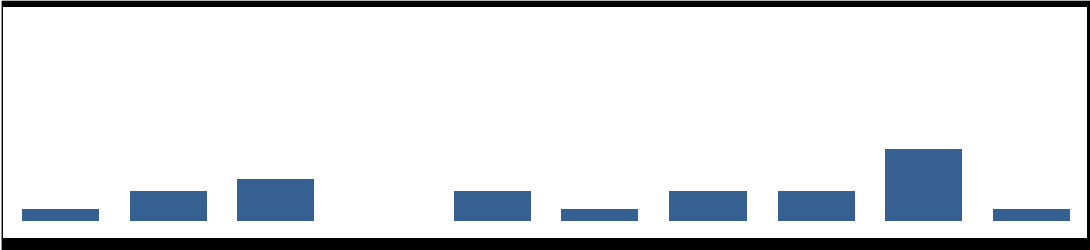
MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.50	8.00		0	0	22

194. ESTABLISHMENT OF AN ELECTRONIC, INTEGRATED DATA SYSTEM FOR ANTIBIOTIC USAGE

➔ Establishment of an Electronic Prescription System, that allows real-time data collection and simultaneous analysis. This system will support the evaluation process of the use of antimicrobials in food-production animals.

➔ Establishment of regional regulations in compliance with EU regulations regarding the obligation for assuring electronic prescription.

➔ Reassessment of the data reporting protocols and the data collection processes to evaluate the on-going administration (potential overuse) of antimicrobials in food producing animals.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.65	8.00		2	0	22

195. COLLECT DATA OF ANTIMICROBIAL USE IN SMALL ANIMAL MEDICINE

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.05	7.00		3	0	22

196. GET AN IDEA OF THE TOTAL AMOUNT (IDEALLY PER SPECIES IF DATA AVAILABLE) OF EACH ANTIBIOTIC GROUP

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.25	5.50		4	2	20

197. CONTROL OF CONSUMPTION AND SPREAD OF RESISTANCE

Promote support for the implementation of programs to control the consumption of antibiotics and the spread of resistance for each production sector and for companion animals, by establishing relationships between the consumption of antibiotics and resistance by each productive sector and pets.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.33	8.00		1	0	22

198. PROVIDE A TECHNICAL SYSTEM TO COLLECT DATA ABOUT ANTIBIOTIC USAGE IN ALL KIND OF FARM ANIMALS AND USING A BENCHMARK SYSTEM

Farmers, together with their veterinarians need a simple and user friendly system to collect data of antibiotic consumption in the field. This system will then automatically create a bench mark tool to compare farmers with each other and veterinarians with each other.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.30	8.00		2	0	22
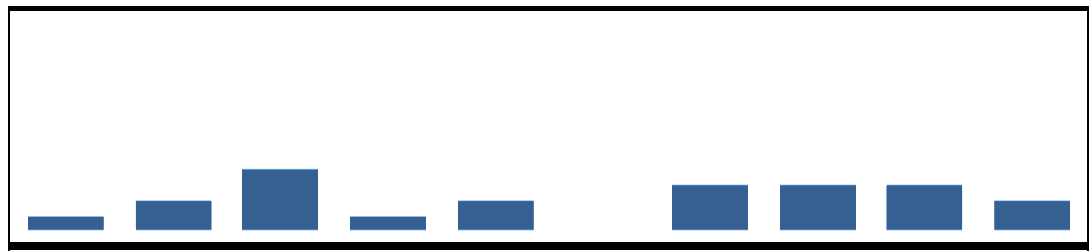
199. QUANTIFICATION, BENCHMARKING AND STEWARDSHIP OF VETERINARY ANTIMICROBIAL USAGE

Develop guidelines on setting up systems for collection of AMU data at farm level that are applicable to guide antimicrobial stewardship.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.23	8.00		0	0	22

200. ANALYSE DATA COLLECTED ABOUT THE ANTIMICROBIAL USE IN SMALL ANIMAL MEDICINE
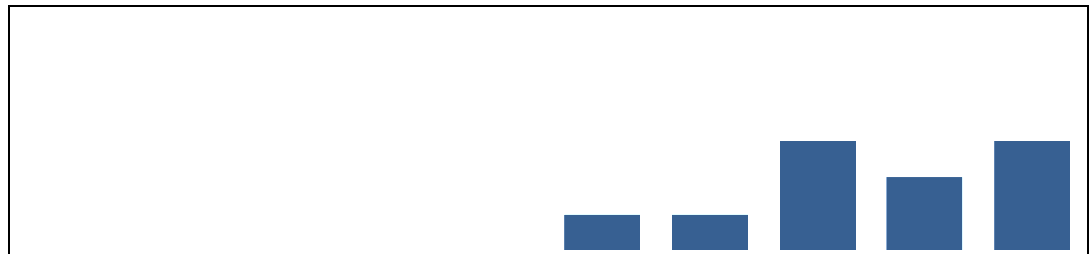
Find out which antibiotics, which species and why they are the most used to elaborate appropriate solutions.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.86	7.00		1	0	22

201. PREVENTING DEVELOPMENT AND SPREAD OF INFECTIOUS DISEASES

Healthy animals to reduce the need for antibiotics, by improving biosecurity at farm level, by vaccine uptake, and by improved nutrition & breeding.

➔ Establish a subgroup to develop specific biosecurity measures to be implemented at farm level. These measures should be distributed to all Member States as a best practice catalogue;

➔ Implement specific biosafety measures in all holdings in EU to ensure healthy animals;

➔ Include selected biosecurity measures in EU legislation step by step to ensure that the measures are feasible for Member State despite their different production systems and types of holdings.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.50	8.50		2	0	22

202. IMPLEMENTATION OF ANTIMICROBIAL STEWARDSHIP (AMS)

Development of Actions within antimicrobial stewardship (examples of antimicrobial stewardship actions) - Actions that attempt to directly influence the behaviour of prescribers, patients, vets and farmers.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.48	8.00		1	0	22

203. BIOSECURITY AND IMPLEMENTATION OF SANITARY MEASURES TO PREVENT OR MINIMIZE THE RISK OF TRANSMISSION OF INFECTIOUS DISEASES IN FARM ANIMALS

Encourage the operators to improve animal husbandry processes as regards to management and biosecurity by advisory support and through the CAP.

Support vaccination campaigns to improve animal health. Organize promotion actions towards encouraging vaccinations.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		1	0	22

204. PROVIDE BIOSECURITY INFORMATION AND BENCHMARK TOOLS FOR FARMERS AND VETERINARIANS

Farmers, together with veterinarians, need to be able to evaluate their own biosecurity status, to identify gaps in biosecurity and to develop a plan of action based on processed information on biosecurity measures (effectiveness, economics, legal obligation, etc.). Suitable tools are needed for this purpose.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		1	0	22

205. INFECTION PREVENTION AND CONTROL MEASURES

- Infection prevention and control measures on livestock holdings —promoting compliance with welfare standards, high biosecurity, good animal husbandry practices, inclusion of probiotics and prebiotics in feed.

- Stimulation of the use of alternatives to antimicrobials, including immunological veterinary medicinal products (vaccines), where applicable, and infection control plans at establishment level.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.59	8.50		0	0	22

206. SUPPORT FARMERS – PURSUING BETTER BIOSECURITY AND ANIMAL WELFARE

Support farmers to improve biosecurity and animal welfare through the common agricultural policy (CAP).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.85	8.50		2	0	22

207. PRECISE EFFECTIVE BIOSECURITY STANDARDS TARGETING AMR ISSUES

Define and promote general as well as species and/or production system specific biosecurity standards targeting AMR issues.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.00	8.00		3	0	22

208. IMPLEMENTATION OF IPC CONCEPT IN THE VETERINARY MEDICINE

Define the concept of IPC for veterinary medicine and define the relationship to biosecurity considering also links to antimicrobial stewardship principles (in collaboration with FVE). Identify processes for which IPC standards should be defined. Define IPC standards itself.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.30	7.00		1	1	21

209. THE ABSENCE OF CONFLICT OF INTEREST THROUGHOUT THE DISTRIBUTION CHAIN OF ANTIMICROBIALS MUST BE APPLIED

Establishment of regulations for veterinary clinics that will determine, among other provisions, the following:

➔ Antimicrobials must not be administered by the same person being responsible for the prescription;

➔ Antimicrobial prescription only for sick animals and strictly upon laboratory confirmation.

A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA and EFSA.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.00	5.00		3	1	21

210. SUPPORT FARMERS IN ORDER TO IMPROVE ANIMAL WELFARE AS WELL AS HUSBANDRY VIA THE COMMON AGRICULTURAL POLICY

Support farmers to improve husbandry and animal welfare through the Common Agricultural Policy.

➔ Introduce financial and regulation incentives in the next CAP for farmers to ameliorate husbandry practices linked to deteriorated animal welfare. The goal is to focus on practices that have an impact on the infection rate of animals, and thus the consumption of antimicrobials;

➔ Those suggestions should be discussed during the meetings with the DG AGRI on the new CAP.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.50		2	0	22

211. PROMOTING PROPER AND MORE LIMITED USE OF ANTIMICROBIALS

- Development of common guidelines on IPC (infection prevention and control) and AMS (antimicrobial stewardship) based on best practices and supporting their implementation.

- Development of a white book on the implementation of antimicrobial stewardship in animal health, including definition of a common structure, description of the core elements, the roles of each core professional and indicators to assess the progress. The EU should prioritize further efforts on antimicrobial stewardship by developing European core elements for antibiotic stewardship programmes at national level.

- Development of evidence-based guidelines for antimicrobial prescription in animals, thereby supporting antimicrobial stewardship in the veterinary sector. Supporting integration and feedback on treatment practices and protocols according to the agents and the relevant diseases.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.95	8.00				

212. IMPLEMENTING MEASURES AT THE EUROPEAN LEVEL TO SUPPORT ACTORS IN THE EVOLUTION OF PRACTICES AND THUS ENCOURAGE MORE VIRTUOUS PRACTICES THAT REDUCE THE RISKS OF AMR (SUCH AS REDUCTION OF DENSITY OR HOUSING IMPROVEMENT)

The implementation of incentives (including financial incentives) is essential at the European level to encourage changes in practices among farmers and health professionals. This work could be done within the framework of the Farm2Fork strategy. In the long term, these measures should make it possible to harmonize practices, avoid competition and thus have an equal impact throughout EU.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.35	8.00		2	0	22

213. ENSURE A HARMONIZED INTERPRETATION BY MEMBER STATES OF THE ANIMAL HEALTH LAW AND THE VETERINARY MEDICINES REGULATION

Create a similar situation for every country so there is equal economical competition. Where necessary, adequate modification of regulations, including delegated and implementing acts to ensure harmonized interpretation and implementation of the animal health law and the veterinary medicines regulation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.05	7.00		2	1	21

214. UPDATE IN THE LEAFLET THE DOSAGE INFORMATION AND DURATION OF TREATMENT OF OLD/NARROW SPECTRUM ANTIBIOTICS

Encourage the pharmaceutical sector to update in the leaflet the dosage information and duration of treatment of old/narrow spectrum antibiotics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.95	8.00		2	0	22

215. STRENGTHENING RESEARCH STRATEGIES
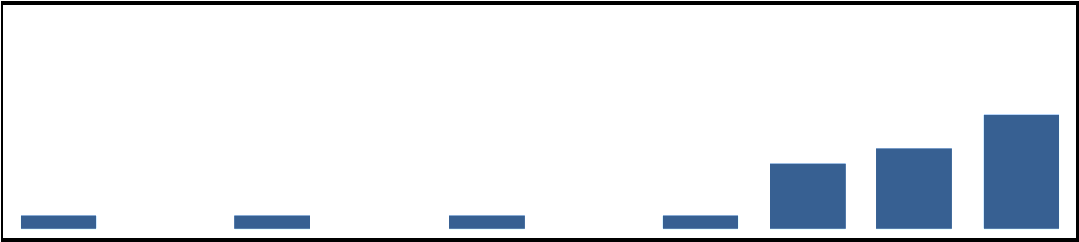
- Stimulating research and innovation in the development of alternatives to antimicrobials (veterinary medicinal products including immunological VMPs, probiotics, prebiotics, immunostimulants, feed additives with proven effect to improve health and resistance to infectious diseases, etc.)

- Develop diagnostic tools and quick antibiograms to be used on the field by animal health professionals ("as simple and rapid as the ones for Covid-19") to avoid misuse of antimicrobials.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.76	9.00		1	0	22

216. ACCESSIBLE AND AFFORDABLE RAPID DIAGNOSTIC TOOLS AND RAPID ANTIBIOGRAMS FOR ANIMAL HEALTH PROFESSIONALS.
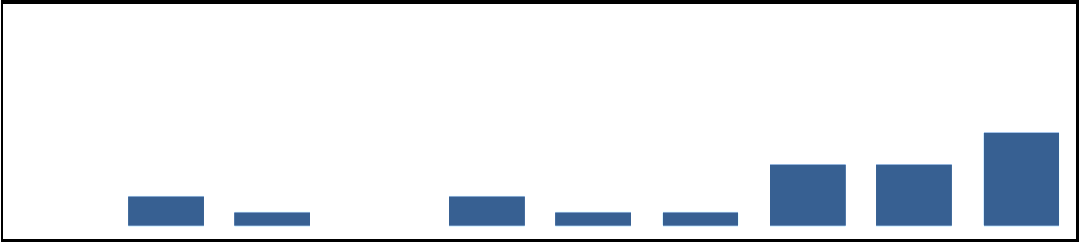
Develop accessible and affordable rapid diagnostic tools and rapid antibiograms for animal health professionals.

• Medical diagnostics industry involvement in One Health concept.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.15	9.00		2	0	22

217. RAPID DIAGNOSTIC TOOLS

Developing tools for rapid diagnostic that could be used in order to avoid the inappropriate use of certain antibiotics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.52	8.00		1	0	22

218. PHARMACEUTICAL INDUSTRY

Encourage to promote (publicity) and produce antibiotics with smaller spectrum for different animal species and to promote more topical use and less antimicrobial associations in products (ex. Small animal medicine: many topical products for ear infections have antibiotics and antifungal molecules combined, which isn't always necessary).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.14	7.00		1	0	22

219. INCREASE THE COMMUNICATION ABOUT AMR TOWARDS VETERINARIAN, FARMERS AND ANIMAL OWNERS

Information and formation sessions could be organized in order to make veterinarian, farmers and animal owners more aware about the AMR problematic.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.27	7.00		0	0	22

220. IMPLEMENTATION OF A CONSULTANCY PROGRAM FOR FARMERS

Concrete actions in favour of animal welfare could be suggested by an expert consultant working in close collaboration with farmers. This could lead to an increased wellbeing of animals and to preventing the risk of infections.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.15	6.50		2	0	22

221. PROMOTE THE USE OF STALL-SPECIFIC VACCINES

Compared to antimicrobial therapy, the production and use of stall-specific vaccines is more time-consuming and costly and is not sufficiently used to improve the health status of livestock. Therefore, there is a need for an information campaign on the benefits and a financial promotion of the use of stall-specific vaccines.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.63	8.00		3	0	22

222. AUTOMATION AND STANDARDIZATION OF RESISTANCE TESTING AT THE AGES VET SITES

Resistance testing by determination of the minimum inhibitory concentration (MIC) is automated using the Micronaut system.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.53	6.00		7	0	22

223. EVALUATION OF THE MIC VALUES FROM THE AGES VET SITES

The MIC values from clinical diagnostics at the AGES VET institutes are evaluated centrally on an annual basis.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.27	6.00		7	0	22

224. PROVISION OF VETERINARY-SPECIFIC LIMITS (BREAKPOINTS)

For the evaluation of the interpretation categories, only limited veterinary-specific limit values are available. Therefore, limit values from the human area have to be used in part, which complicates the evaluation of the probability of a successful therapy.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.25	7.00		0	2	20

225. PROMOTE R&D

Promote research in animal health on diseases of unknown aetiology such as the mucoid epizootic in rabbits or understanding the role of the microbiome in the various predisposing factors in multifactorial infectious diseases.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
5.57	6.00		2	0	22

226. UPDATE ON VETERINARY ANTIMICROBIAL USAGE

Promotion of activities for the responsible use of veterinary medicines to publicize the new conditions of use required in the new regulations for both the veterinary and livestock groups and the population in general (create a common veterinary administration program).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.18	8.00		5	0	22

227. PRESCRIPTION SUPPORT TOOLS IN ANIMAL HEALTH

Promotion of interactive tools to help prescription and choose the most appropriate treatment within the rational and responsible use of antibiotics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.00	8.00		1	0	22

228. VETERINARY MEDICINES REGULATION: PROGRESS INDICATORS

The new Veterinary Medicines Regulation requires strong commitment and implementation by member states to ensure a harmonized, responsible use of antimicrobials, with the aim to prevent the development of AMR in the EU. Set progress indicators to measure the progress on the implementation of the in the VMR obliged monitoring of antibiotic use in the National Action Plan on AMR.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.89	7.00		3	0	22

229. IONOPHORES

Critical review of the use of ionophores in feed additives moving towards the new feed additive regulation.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.58	8.00		2	1	21

230. EU STRATEGY – ANIMAL MANAGEMENT SYSTEMS

Develop an EU strategy and implementation plan to improvement of animal management systems (current animal husbandry and animal supply chain systems seem to be limiting factors to further improve animal health and animal management practices. These systems are often international and tightly organized, which limits the possibilities for tailored approaches and argues for an EU approach).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.11	7.00		3	0	22

231. DEVELOP COOPERATION BETWEEN COUNTRIES, IN PARTICULAR TO DISSEMINATE KNOWLEDGE ON GOOD PRACTICES FOR PRESCRIBING ABS, GOOD PREVENTION AND BIOSECURITY PRACTICES

Different meeting should be organized by the ECDC, the EFSA and the EMA to promote the sharing of knowledge between on national measures undertaken to counter AMR in the animal sector.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.57	7.00		1	0	22

232. INCREASE THE RECIPROCITY OF HEALTH AND SAFETY REGULATIONS ABOUT AMR ON IMPORTED PRODUCTS OF ANIMAL ORIGIN

Ensure the correct application of article 118 of regulation EU 2019/6 and its delegated acts.

Include reciprocity measure in relation to AMR in the revision of Regulation (EC) 1831/2003 on feed additives - to prohibit, for example, the use of antimicrobials as additives after an assessment of the impact.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.24	8.00		1	0	22

233. STRENGTHEN THE ISSUE OF AMR AS A PART OF THE ONE HEALTH IN THE CURRICULA OF THE VETERINARY FACULTIES AND UNIVERSITIES

Develop/revise/promote minimum educational standards for pre-/post-gradual students of veterinary faculties with respect to AMR as a part of One Health.
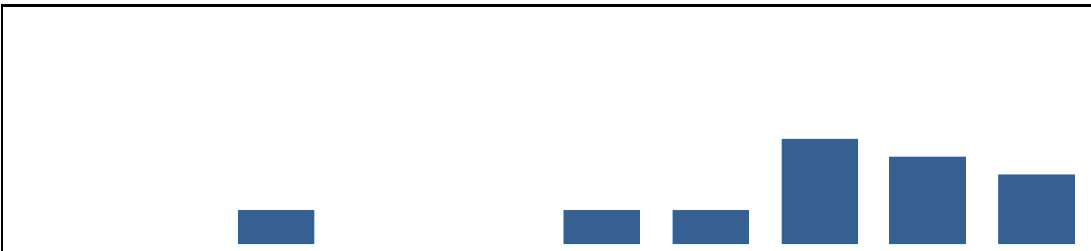
Develop/revise/promote core competencies for pre-/post-gradual students of veterinary faculties aimed to contain the AMR in the veterinary medicine.

Include the topic of AMR (One Health) into the accreditation criteria for higher veterinary education (EAEVE/FVE evaluation).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.09	8.00		0	0	22

234. POST-GRADUATE EDUCATION FOR VETERINARY PRACTITIONERS ON AMR AND RESPONSIBLE USE OF ANTIMICROBIALS

Develop lifelong learning and up to date status of knowledge representing materials for veterinary practitioners focusing on responsible use of antimicrobials, AMR control, and One Health concept (in collaboration with FVE).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.86	8.00		1	0	22

235. ESTABLISHMENT OF NETWORK OF EXPERTS IN THE DETERMINATION ANTIMICROBIAL BREAKPOINTS AND IN ANTIMICROBIAL SUSCEPTIBILITY TESTING IN VETERINARY MEDICINE.

Ensure availability of robust susceptibility testing methods and interpretation criteria (veterinary clinical breakpoints) – VETCAST:

·   Define the relevant set of pathogens

·   Define the relevant set of antimicrobials

·   Improve the data availability as essential pre-requisite for establishing of relevant breakpoints as well as responsible and evidence based use of antimicrobials in veterinary medicine

·   Promote standardised testing methods/interpretation criteria - to enable measurement/trend assessment/benchmarking etc.

·   Ascertain adequate financial support and building of expert capacities for the project.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.59	8.00		0	0	22

236. INDICATORS OF RESPONSIBLE USE OF ANTIMICROBIALS IN CLINICAL VETERINARY PRACTICE

Identify possible indicators of responsible use of antimicrobials in veterinary practice.

Objectively assess costs/benefits.

Introduce suitable indicators into practice considering local/national conditions too.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.75	7.50		1	1	21

237. ESTABLISH EXCHANGE FORMATS

Establish formats in which member states (bi- or multilateral) can discuss specific AMR-related topics. Such discussion groups are useful for both, the human and the animal/food side, but should be conducted for each sector separately to allow for an in-depth discussion taking into account the existing regulatory framework of the respective sectors. Topics to be discussed could be e.g. how to overcome obstacles in the implementation of measures.

➔ Should be established as soon as possible and continued permanently

Different formats could be conceivable, such as the OHN, the Joint Action on AMR, or other. It should however, be taken into account that, depending on the topic, a single exchange could be sufficient. Experts who are not part of the OHN might also have to be involved. The JAMRAI seems therefore less suitable, since its duration is limited and only certain partners are participating and their activities can be financed.

For the vet sector, the Commission working group on AMR might also be a possible format not only to discuss the legislation on AMR monitoring, but also epractical questions related to the implementation of the new EU vetmed products legislation, AMU in poultry production.

The last meeting in Grange related to the fact finding missions on AMU also enabled very useful discussions of "very-day-problems" related to AMR and AMU in the veterinary sector.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.43	7.00		1	0	22

238. IMPROVE COORDINATION WITHIN COMMISSION SERVICES AND BETWEEN COMMISSION AND MEMBER STATES REGARDING EU'S AMR STRATEGY IN MULTILATERAL AND GLOBAL FORA.

There is a bigger chance of success for getting EU AMR positions into international agreements if EU and national representatives are well coordinated and well organized, so that all EU MS and EU itself push for the same things and are always aware of AMR-related activity going on in different fora.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.90	7.00		2	0	22

239. ENFORCE IPC AND BIOSECURITY MEASURES ACROSS THE EU

IPC should target both community-acquired and healthcare-associated infections (in particular bacterial and viral infections) in human and veterinary medicine. Improving animal husbandry and biosecurity practices also contributes to reducing AMR.

➔ Such actions to reinforce IPC measures should be included in the next EU One Health AMR Action Plan.

➔ The current review of AMR NAPs made by the Commission will provide data showing if these actions are included at national level and may formulate suggestions for improvement.

➔ IPC measures and biosecurity (human and animal health) actions should be included in the EU4Health work program as well as the European Commission's Farm to Fork Strategy.

➔ Develop addition regulations such as Regulation (EU) 2016/429 on transmissible animal disease in order to help reinforce IPC and biosecurity actions in veterinary medicines.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.71	8.00		1	0	22

240. FACILITATE THE DEVELOPMENT OF EUROPEAN STANDARDS, GUIDANCE AND INDICATORS ON AMS, IPC AND BIOSECURITY PRACTICES WITH A ONE HEALTH APPROACH (3/4)

Develop core elements for AMS, IPC and biosecurity programs (based on the EU-JAMRAI recommendations). These would guide implementation at national and facility levels, both in human and in animal health and would represent the minimum reference framework for all member states
➔ These actions should be included in the upcoming joint action on AMR, within the EU4Health program;
➔ Alternatively, the European agencies (ECDC, EMA and AFSA) could be mandated by European Commission to develop such guidance.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.33	8.00		2	0	22

241. FACILITATE THE DEVELOPMENT OF EUROPEAN STANDARDS, GUIDANCE AND INDICATORS ON AMS, IPC AND BIOSECURITY PRACTICES WITH A ONE HEALTH APPROACH (1/4)

Develop core competencies (based on the EU-JAMRAI recommendations) that may be used as a reference in the EU for the undergraduate and postgraduate training of professionals in human and animal health.
➔ These actions should be included in the upcoming joint action on AMR, within the EU4Health program.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.90	8.00		2	0	22

242. FACILITATE THE DEVELOPMENT OF EUROPEAN STANDARDS, GUIDANCE AND INDICATORS ON AMS, IPC AND BIOSECURITY PRACTICES WITH A ONE HEALTH APPROACH (2/4)

Develop mentorship and observership programs on IPC and AMS in human and veterinarian medicines as well as biosecurity in veterinarian medicine (based on the EU-JAMRAI recommendations).

➔ These actions should be included in the upcoming joint action on AMR, within the EU4Health program.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.72	**7.00**		4	0	22

243. FACILITATE THE DEVELOPMENT OF EUROPEAN STANDARDS, GUIDANCE AND INDICATORS ON AMS, IPC AND BIOSECURITY PRACTICES WITH A ONE HEALTH APPROACH (4/4)

Facilitating the routine collection of data and indicators on the appropriateness of antibiotic usage, both at national and European level in human and animal, is urgently needed, since almost all available data currently focus only on quantity and volume of use.

➔ European agencies such as ECDC, EMA and AFSA should be mandated by the European Commission to work on this topic.

➔ A subgroup of the AMR OHN could be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.53	**8.00**		3	0	22

244. INTRODUCE AND ENFORCE MEASURES TO RESTRICT AND OPTIMIZE THE USE OF ANTIMICROBIAL MEDICINES AND FOSTER INNOVATION FOR THE DEVELOPMENT OF INNOVATIVE ANTIMICROBIALS.
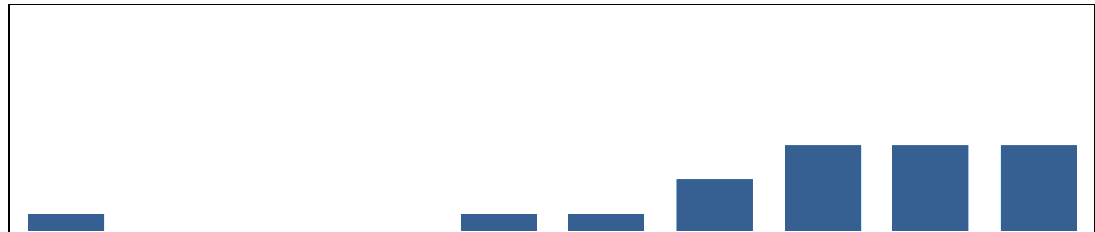
Include such measures in:

➔ The 2020 pharmaceutical strategy
➔ The national implementation of the article 107 of the regulation (EU) 2019/6 regarding veterinary medicinal products.
➔ The implementation of the responsibilities for biosecurity introduced by the regulation (EU) 2016/429 on transmissible animal diseases.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.76	8.00		5	0	22

245. INCREASE LONG-TERM AND SUSTAINABLE ACCESS AND AVAILABILITY OF ANTIBIOTICS TO PRESERVE EFFECTIVE TREATMENT OF BACTERIAL INFECTIONS

Access to both new and older antibiotics need to be guaranteed. This issue is highly relevant for all patients in the EU to ensure optimal treatment, including for the society since it aims to curb AMR. Availability problems include both when products are not launched and when established products are withdrawn from markets as well as more or less temporary shortages. Due to increasing AMR and scarcity of new agents, the antibiotics that already exist must be used responsibly. However, older but still effective antibiotics run the risk of being taken off the market due to small volumes and limited revenues for these. Even if there are some ongoing national, EU and global initiatives to strengthen availability, a coordinated EU initiative would greatly contribute and give added value. The aim should be to create a diverse portfolio and stable supply chains to secure the best treatment and to minimize resistance development. Methods to increase access include different push and pull incentives and can be related to economic incentives, procurements, legal and regulatory aspects, as well as increasing transparency to assure effective early warning systems. For some aspects, more research is required. One way to achieve this could be through a strategy implemented by HERA. It may be monitored by measuring changes in the number of products introduced and taken off the market in the EU or in individual MS, and also by measuring changes in serious shortages of antibiotic products.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		1	0	22

246. ENSURE THE AVAILABILITY OF ANTIBIOTICS

This should be a priority at EU level.

Include the topic of securing supply of antibiotics in the upcoming international instrument on pandemics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.19	8.00		1	0	22

247. WORK ON THE AVAILABILITY OF ANTIBIOTICS, BOTH FOR HUMAN AND ANIMALS, ESPECIALLY WHEN THERE IS A LACK OF COMMERCIAL INTEREST

EMA already has a proactive policy regarding this matter, but new incentives and levers need to be added, especially in veterinary medicine.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.23	9.00		0	0	22

248. REPURPOSING OF OFF-PATENT ANTIMICROBIALS

Explore the evidence-based repurposing of already approved, off-patent antimicrobials to treat patients and animals in areas of unmet needs.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.09	8.00		0	0	22

249. REPURPOSING AND PK/PD STUDIES OF OFF-PATENT ANTIMICROBIALS

Research on repurposing (new indications) and PK/PD studies of off-patent antimicrobials, in particular antibiotics, addressing unmet clinical needs, should be prioritized.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.36	8.00		0	0	22

250. IMPROVE THE AVAILABILITY OF OLD/NARROW SPECTRUM ANTIBIOTICS

Dress a list of antibiotics of special medical value that must be safeguarded, both for human and veterinary medicine

➔ Enter into EU-wide agreement with pharmaceutical companies to ensure continuous availability of such antibiotics;

➔ Secure the supply.

This action could be part of the Pharmaceutical Strategy for Europe and HERA.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.00	8.00		1	0	22

251. INCREASE HUMAN RESOURCES CAPACITIES BY FINANCING THE TRAINING OF AMR PROFESSIONALS THROUGH EU COHESION AND STRUCTURAL FUNDS, AND BY DEFINING A MINIMUM LEVEL OF TRAINING FOR HEALTH PROFESSIONALS ON AMR

Provide an incentive to pursue training and education in IPC and AMR through financing the training of AMR professionals through EU Cohesion and Structural funds. Ascertain what the minimum standard of training is required for each healthcare discipline. Define and agree a minimum level of training for health professionals on AMR for human health and animal health sectors. The EU4Health program could potentially support this action.

➔ A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC.

Liaise with the various educational stakeholders to ensure that AMR education is standardized and included in undergraduate curricula across the EU.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.58	8.00		2	1	21

252. PRE- AND POSTGRADUATE EDUCATION AND TRAINING

Ensure that all Member States develop criteria for the education of medical and veterinary doctors and nurses and pharmacists in antibiotic stewardship and prudent use of antibiotics. Consider recommendations for involving (specially-trained) pharmacists in developing treatment guidelines and monitoring their use.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.09	8.00		1	0	22

253. DEVELOP COMMON COURSES ON AMR IN THE INITIAL TRAINING OF HEALTH PROFESSIONALS

Develop joint courses on AMR with veterinary, pharmacist, medical student in a "One health" approach in order to have a better comprehension between the different sectors of AMR and share the core competencies to prevent and monitor AMR

·   Promote the inclusion of joint courses in the NAPs on AMR of EU member states

·   Inclusion in Directive 2005/36/EC on the recognition of professional qualifications of the need to set up joint "One Health" training modules for the health professionals mentioned above.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.05	8.00		1	0	22

254. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS

Increase laboratory capacity at both local and national reference laboratory levels. Continue supporting implementation and increased use of molecular diagnosis testing, in particular whole-genome sequencing in surveillance and outbreak analysis.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.80	8.00		1	1	21

255. STRENGTHEN REAL TIME SURVEILLANCE TOOLS – REINFORCE COMMON EU INDICATORS ESTABLISHMENT

Develop common EU indicators and measurable goals on the use of Antimicrobials (AMU) and AMR notably by updating and strengthening the 2017 ECDC, EMA and EFSA indicators and ensuring their active use at Member State level while ensuring that the objectives are differentiated according to the different national contexts).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.85	8.00		2	0	22

256. SUPPORT THE DEVELOPMENT OF COMMUNICATION TOOLS AND STRATEGIES OF BEHAVIOR CHANGE

Strengthen research on cultural and other barriers for behaviour change amongst professionals related to adhering to antibiotic treatment guidelines.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.90	8.00		1	0	22

257. REGULAR MONITORING AND EVALUATION OF PROGRESS OF NATIONAL ACTION PLANS INCLUDING DEVELOPMENT OF SPECIFIC TARGETS FOR REDUCTION OF ANTIMICROBIAL CONSUMPTION AND MANAGEMENT OF RESISTANT MICROORGANISMS

Ensure the development in all Member States of NAPs that define specific targets both for reduction and/or regulation of antimicrobial use towards a more rational use and management of resistant microorganisms. While most countries have succeeded in building the needed formal mechanisms in NAPs, many of these are not functional, which might be due to the lack of specific targets. Each Member State should set its own targets, relating to an evaluation of the highest intra-country threats and considering the individual situation of the countries.

Suggested targets for the human sector:

➔ A reduction by 2025 in total antimicrobial consumption for humans to the level of the current EU average for countries currently above this average. WHO and ECDC have provided estimates supporting the feasibility of this target. For countries below current average, a specific percentage reduction in total antimicrobial consumption

➔ Targets for control or reduction of specific antimicrobial resistant organisms (e.g. control of spread between wards and/or institutions or incidence reduction of X% by 2025).

Suggested targets for the animal sector:

➔ Encourage Member States to include binding, national reduction targets for veterinary antibiotic sales in the NAP based on the national context, but taking into account the EU goal of reducing the overall EU sales of antimicrobials for farmed animals and in aquaculture by 2030 by 50 %.

➔ In the long term, establish a maximum ceiling at EU level for antibiotics used per produced animal unit (PCU).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.95	8.00		1	0	22

258. SUPPORT RESEARCH ON DIAGNOSIS AND ALTERNATIVES

Support research on diagnosis and alternatives (vaccination, phage therapy). Horizon Europe could support this research area.

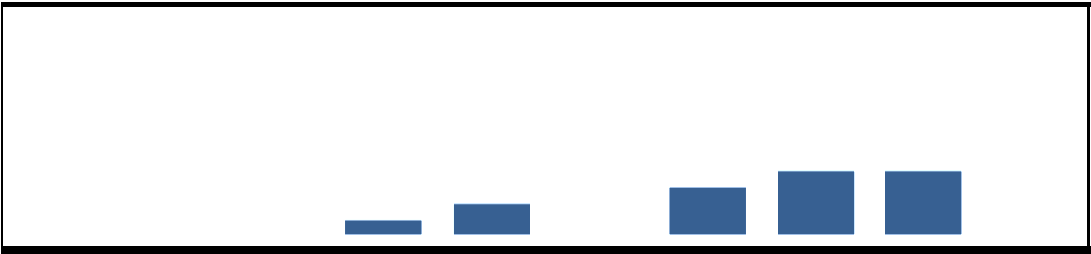| MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.36	8.00		0	0	22

259. PROMOTE THE DEVELOPMENT OF ALTERNATIVES TO ANTIMICROBIALS

· The lack of regulations concerning the alternatives (ex. phage therapy) need to be covered at EU level;

· Research and development regarding alternatives need to be promoted in the framework of the JPI AMR.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.64	8.00		0	0	22

260. SUPPORT IVD REGULATION AT THE EU LEVEL
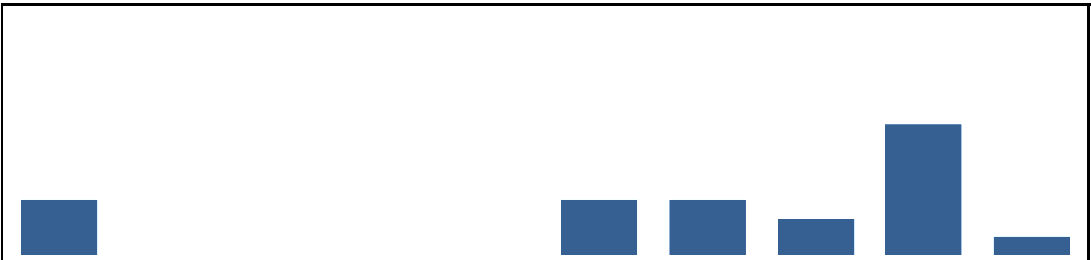
https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5209

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.36	8.00		8	0	22

261. EU HARMONIZED GUIDELINES
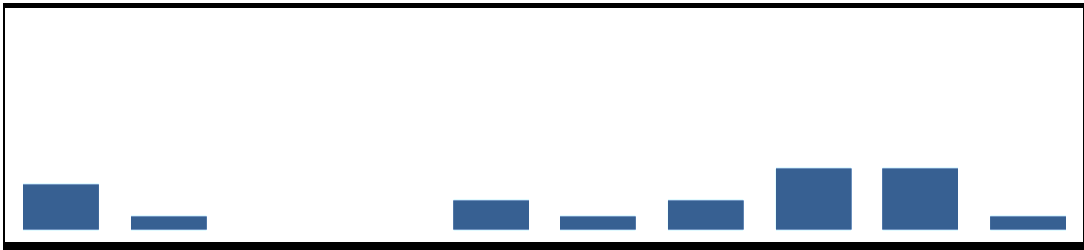
There are EU-guidelines on the prudent use of antibiotics in veterinary medicine but not on antibiotic treatment. Specific guidelines on biosecurity, infection prevention etc. are also useful. This can be interesting for both the human and animal health sectors.

➔ Develop EU harmonized guidelines

➔ Promote their implementations. For the stewardship, the use of antibiotic treatment guidelines should become stricter so that health professionals adhere more to the advised treatments.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.89	8.00		3	0	22
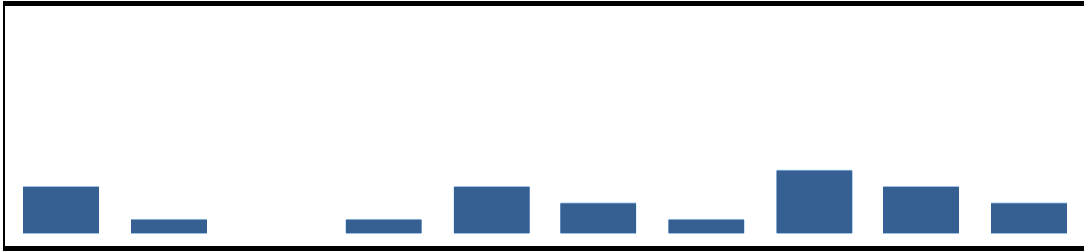
262. EU DIRECTIVE FOR THE CREATION OF A CAREER ON INFECTION CONTROL/AMR PREVENTION

Indicator: Number of EU countries with a recognized career on the topic.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.28	7.50		4	0	22

263. FINANCING THE IMPLEMENTATION OF ALGORITHMS THAT INCLUDE THE USE OF RAPID DIAGNOSTIC TESTS

Indicator: Number of official national guidelines that include this strategy.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.10	6.50		2	0	22

264. SYSTEMATIZE HIGH-LEVEL INFORMATION POINTS ON AMR, BOTH IN HUMAN AND VETERINARY BODIES, TO INFORM AND RAISE AWARENESS ON THE ISSUES AND THE EU PROGRESS ON AMR

By continuing the One Health dynamic launched by France at the ministerial conference on AMR on March 7, 2022, France is in favour of developing cross-sectoral AMR items (e.g. CMO and CVO). Parallel information points in the EPSCO and AGRI Councils would be part of this same dynamic.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.38	7.00		1	0	22

265. ECOTOXICITY

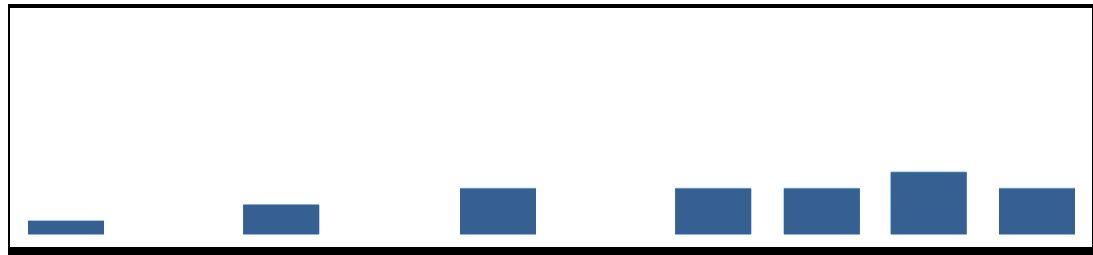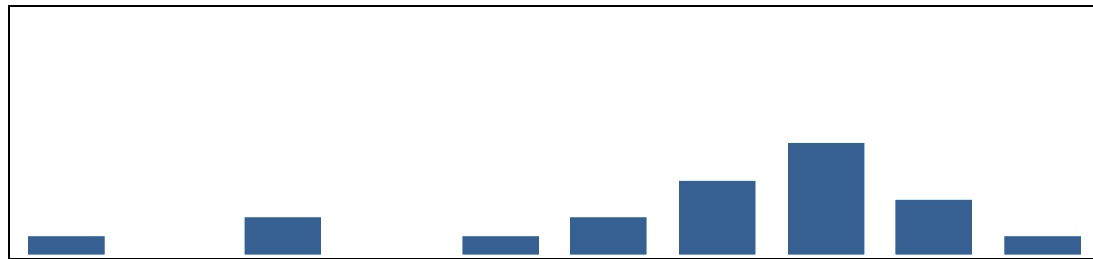Rank antibiotics especially those defined as critically important, depending on their impact on selection of AMR in the environment.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.00	8.00		3	0	22

266. DEVELOP AND STRENGTHEN REAL-TIME SURVEILLANCE TOOLS AND COMMON EUROPEAN INDICATORS
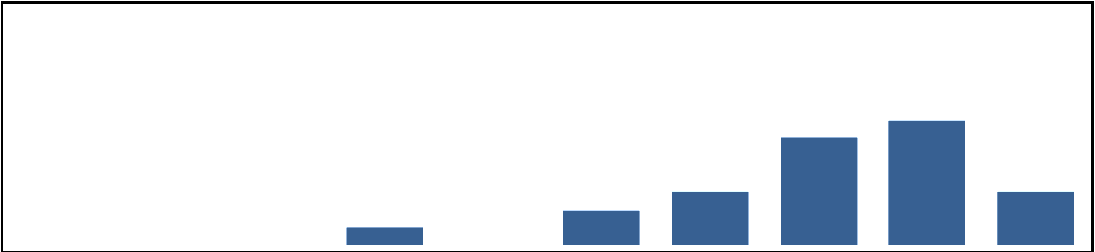
Observatory at national or European scale. Building an inventory based on gathering data come from local actions and research activities to centralize information on the spread of AMR in the environment. This tool will be able to improve the mitigation and adaptation measures.

Training: helpful to awareness among citizens and stakeholders on environment AMR spread and related exposure risks.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.00	8.00		3	0	22
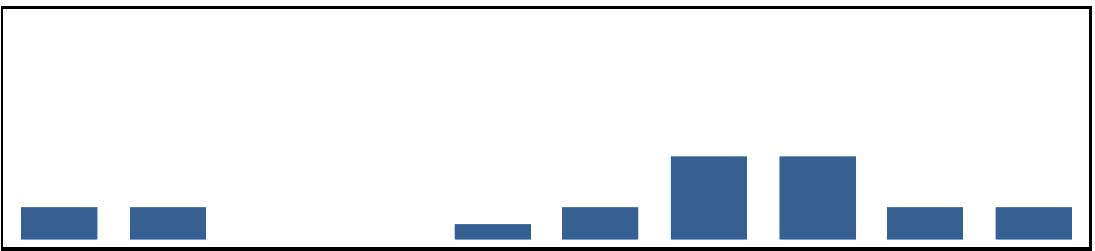
267. STRENGTHEN DATA COLLECTION AND SURVEILLANCE SYSTEMS

Clarify the purpose of environmental monitoring in relation to how and where the results should be applied. Clarify and harmonize methods to conduct environmental monitoring, to ensure that Member States provide comparable results. Clarify whether there is a need for development within the area.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.09	8.00		0	0	22

268. STRENGTHEN REAL TIME SURVEILLANCE TOOLS – ESTABLISH ENVIRONMENTAL EU INDICATORS

To develop real time surveillance tools regarding environment – setting harmonized and quality data on the presence of antimicrobials and resistance in the environment.

To proceed and continue working on producing a true One health European report such as JIACRA.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.48	7.00		1	0	22

269. DEVELOP AND STRENGTHEN REAL-TIME SURVEILLANCE TOOLS AND COMMON EUROPEAN INDICATORS

-Develop real time surveillance tools in order to collect high quality data on the presence of antimicrobials and resistance to antimicrobials in the environment. Data generated by those surveillance tools sho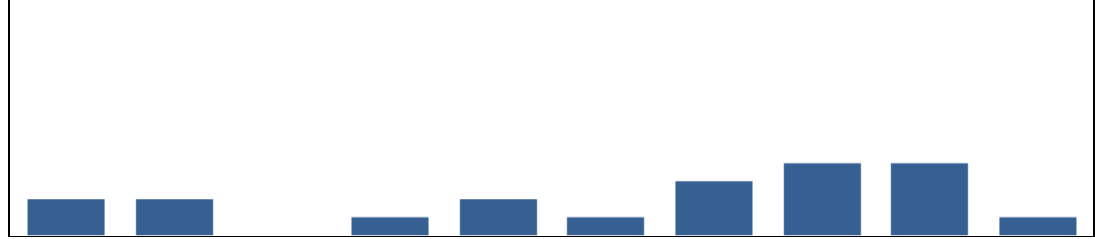uld be analysed in a cross-sectorial way, when relevant. The 2017 ECDC, EMA and EFSA common indicators on AMR and antimicrobial use should also be updated and expanded, and their active use should be ensured at national level. Those indicators should be associated with targets (relevant to the different national contexts).

➔ A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations, together with EMA, EFSA and ECDC.

- Implementation of AMR monitoring in the environment.

- Mandatory inclusion in the screening of at least one species of free-living animals as a bioindicator of environmental contamination in a given country. In Poland, the red fox (Vulpes vulpes) could be such a model due to the obligatory monitoring of rabies in this species. With monitoring shoots, it would be possible to take samples to assess the drug susceptibility of indicator bacteria: E.coli, Enterococcus faecalis or E. faecium. Other advantages of this species: widespread occurrence in Poland, relatively high level of synanthropization (which may increase the carriage of drug-resistant microorganisms), widespread occurrence in EU countries (potential use of this species as an indicator in other European countries)

- It should also be considered whether, in the case of monitoring studies in free-living animals, protocols of isolation of randomly selected strains or targeted isolation for drug resistance of strains posing a threat to public health (e.g. resistance to cephalosporin, carbapenems, fluoroquinolones, colistin) should be used.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.25	7.00		2	0	22

270. IDENTIFY MAJOR SOURCES AND PATHWAYS OF EMISSIONS OF ANTIBIOTIC RESIDUES AND ANTIMICROBIAL RESISTANCE TO THE ENVIRONMENT BY JOINT SCREENING EFFORTS AMONG EU 27.

*Background: t*he knowledge on sources, pathways and magnitudes of emissions needs to increase on an EU level in order to develop effective actions and policies to limit the development and spread of antimicrobial resistance. Since the problem picture is diverse, several EU initiatives and actions are needed.

*Action: i*nclude AMR in Horizon Europe Programmes and other relevant research initiatives. Screening efforts could e.g. be included in Horizon Europe Partnership on Risk Assessment of Chemicals (PARC).

*Deliverable: m*apping emissions of antibiotic residues and antimicrobial resistance from relevant sources among EU 27 MS.

Joint screening efforts measuring levels of antibiotic residues and antimicrobial resistance in e.g. wastewater treatment plants, industry effluents and farming facilities within EU.

Beneficiaries: EU and national and local authorities.

Effect: Building monitoring capacity and enable more MS to screen emissions due to the co-financing procedure under e.g. Horizon Europe. A baseline to enable development of effective policies and measures in relevant EU initiatives, strategies, and EU environmental and pharmaceutical legislation to limit the development and spread of antimicrobial resistance. Among the EU legislation there are several directives with policy relevance e.g. connected to wastewater plants (including use of water and sludge), water frame directive, industrial emissions directive, pharmaceutical directive for humans etc. Might in the long run be a useful indicator to follow up efficiency on implemented policies and measures.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.82	8.00		0	0	22

271. AMR IN THE ENVIRONMENT

More research is needed on the risk of AMR in the environment due to the use of antimicrobials in veterinary medicine towards human and animal health, including the role played by the environment in the emergence and spread of AMR through the food chain.

Use the opportunity offered by the upcoming revisions of legislative acts such as the Industrial emissions Directive and the Urban Wastewater Directive as well as the pharmaceutical legislation, to address the need to reduce the risk from pharmaceutical in the environment.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.40	8.00		2	0	22

272. ASSESS THE RESEARCH NEEDS ON AMR AND THE ENVIRONMENT

Define a list of research priorities to document the role of the environment towards AMR development and persistence.

The research priorities should address the following needs:

- Identify the role of biocides, specifically the mechanisms of co-selection of antibiotic resistance by biocides in the environment;

- Assess the impact of relocation in European countries of the production of active substances (that imply new chemical discharges in the environment) on the evolution of antimicrobial resistance.

- Identify which new substances and matrices (fish farming, soils…) should be studied;

- Assess the maximum resilience capacity of continuously contaminated ecosystems;

- Document the impact of climate change on AMR.

A subgroup of the AMR OHN should be created to specifically discuss the topic and make concrete recommendations.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.75	8.00		1	1	21

273. PROVIDE EU GUIDELINES AND REGULATION REGARDING PRODUCTION OF PHARMACEUTICALS AND WASTEWATER MANAGEMENT

Provide guidance and regulation for sustainable and clean production of antimicrobials both in- and outside the EU, including criteria for wastewater management to avoid antimicrobial production contributing to antimicrobial resistance in the environment.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.58	9.00		2	1	21

274. PROVIDE EU GUIDELINES AND REGULATION REGARDING PRODUCTION OF PHARMACEUTICALS AND WASTEWATER MANAGEMENT

Incorporate environmental risk assessment in the authorisation of pharmaceuticals for the purpose of labelling containing information on environmental impact and proper disposal. In this way, it will be possible to use the pharmaceuticals with least environmental impact.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.60	8.00		2	0	22

275. PROVIDE EU GUIDELINES AND REGULATION REGARDING PRODUCTION OF PHARMACEUTICALS AND WASTEWATER MANAGEMENT

The most cost-effective measures including legal measures to mitigate the effects of pharmaceuticals in the environment including the fight against AMR should be assessed based on the report "COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE European Union Strategic Approach to Pharmaceuticals in the Environment".

The communication provides 6 areas of initiatives and specific measures including;

- ➔ Support the development of pharmaceuticals intrinsically less harmful for the environment and promote greener manufacturing.
- ➔ Improve environmental risk assessment and its review.
- ➔ Reduce wastage and improve the management of waste.
- ➔ Expand environmental monitoring and fill other knowledge gaps.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.90	8.00		1	0	22

276. REINFORCE SURVEILLANCE IN THE ENVIRONMENT BY PROPOSING NEW SUBSTANCES TO BE INCLUDED IN THE WATCHLIST OF THE WATER-FRAMEWORK DIRECTIVE

→ Dress a list of priority substances considering the risk they pose for human, animal and environmental health

→ Provide financial support to MS for implementing environmental monitoring/surveillance

According to the Environmental Quality Standards (EQS) directive, the watch list should be updated every 2 years. This action could be included in the next round of revision.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.81	8.00		1	0	22

277. MONITORING OF ANTIBIOTICS/ANTIBIOTIC RESISTANCES IN THE AQUATIC ENVIRONMENT

Develop a reliable and simple tool to assess the presence of antibiotics/antibiotic resistances (genes and bacteria) in waste water treatment effluents and water bodies and assure EU-wide comparison.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.25	8.00		1	0	22

278. AMR STUDY IN SEWAGE WATER TREATMENT PLANTS (SWTP)
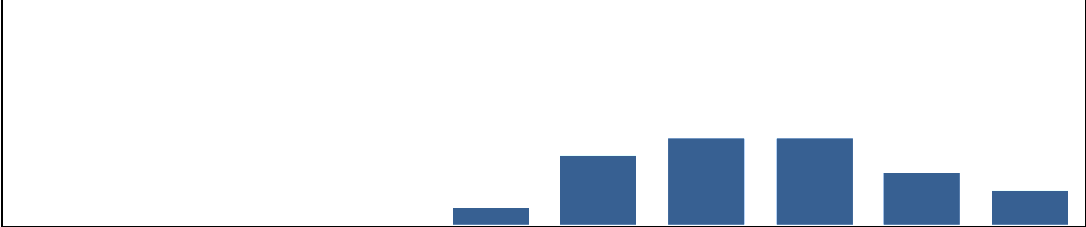
Sampling of SWTP effluents in a representative number of EU cities as a first step to define a future monitoring scheme that will allow us to:

· Limit emission of ARM determinants (ARG, ARB and antibiotics) to the environment,

· Complement ongoing analysis on AMR prevalence and link it to the trends in usage.

To achieve the above goals, the study should be designed in a way that allow as to:

· Evaluate the effect of different tertiary treatments of SWTP on the removal of AMR determinants.

· Consider the impact of seasonality on the emission from SWTP

· Consider the best sampling day timing to obtain relevant and comparable data.

· Identify the best gene(s) for surveillance (in terms of sensitivity and costs of the analysis and in terms of usefulness of the selected gene(s))

· Disentangle the role of the biosolids produced in SWTP as points where ARG and ARB concentrate and amplify.

· Understand the behaviour in the environment and the effect of dilution of the emitted determinants by sampling downstream and upstream waters and sediments

· Assess the effects of local antimicrobial consumption and of environmental parameters (such as amount of rains or flow of the receiving rivers) on the total emission to the environment; for getting that information a representative number of cities should be chosen.

The implementation of this study should be step-wise and allowing an intermediate pilot phase to check the validity of the precedent phase of design of the study.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.55	7.50		2	0	22

279. EU REGULATION ON THE MANDATORY EXISTENCE OF AN ENVIRONMENTAL AMC/AMR SURVEILLANCE SYSTEM

Review of the Water directive (Directive 2000/60/CE) and the Priority substances Directive (Directive 2013/39/UE), so that they would include antimicrobials (human and vet use) as priority substances to be monitored in the surveillance system.

Indicators:

- Production of the Regulation

- Number of EU countries with a National Reference Laboratory for Environmental Antibiotics

- Number of EU countries with programs for antimicrobial monitoring and screening of contaminants in the water (surface and ground water) and, eventually, for AMR genes.

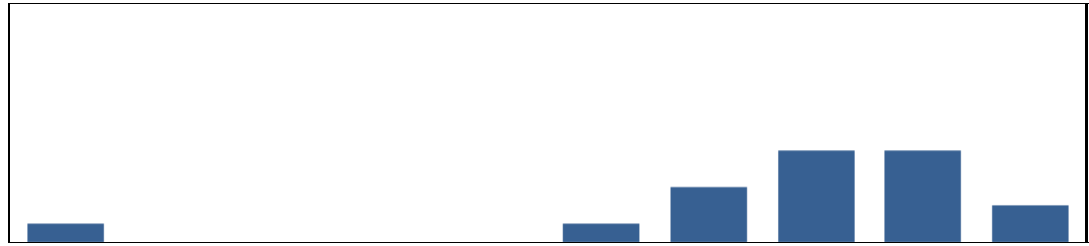| MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.72	7.00		4	0	22

280. ENVIRONMENTAL MONOGRAPHS

Support the principle of environmental monographs for veterinary medicines and extend it to antimicrobials in human medicines.

➔ Harmonized environmental information by active substance in the monographs would make it possible to identify the molecule most present in the environment and to give indications as to the biospheres to be investigated in the context of their monitoring.

➔ To have a better understanding of the environment as a reservoir and interface in the transmission of resistance with the human population and with animals.

Rationale: during the marketing authorisation process for medicinal products for human or veterinary use, an analysis of the impact of these medicinal products and/or their major metabolites on the environment is requested. This analysis can be summarized as follows: the assessment is carried out in several phases. The first phase, which is theoretical, consists of estimating the exposure of the environment to the active substance: at the level of surface water for medicinal products for human use (PEC surface water<10 ng/L) and at the level of soil for medicinal products for veterinary use (PECsoil<100µg/kg). According to the "Guideline on the environmental risk assessment of medicinal products for human use", for active substance with an antibacterial mode of action, and no other known pharmacological targets, a targeted effect assessment should be performed for the aquatic compartment. The second phase of the analysis consists of determining the physico-chemical properties of these molecules as well as their fate and eco-toxicity. The description of the transformation of these active substances in the environment, their degradation and their effects at aquatic or terrestrial level could help in understanding the environment as a reservoir and as an interface in the transmission of resistance with the human population and with animals. Many medicines, including antimicrobials, were authorized before October 2005 for veterinary medicines and before December 2006 for human medicines, when this assessment was not required. Therefore, they were not assessed. An active substance administered according to the same route of administration, dosage and indication will have the same ecotoxicological impact whatever the name of the product. Pooling the available data of high quality would allow the ecotoxicological profile per substance to be described in a monograph and would provide more information on the active substances or metabolites to be monitored and the biospheres to be investigated. Such an initiative has already been launched for monographs for veterinary medicines (not restricted to antimicrobials). In January 2022, the European Commission presented to the European Parliament the results of a feasibility study for such monographs. The initiative is strongly supported by many National Competent Authorities. To date, the decision on whether or not to implement these monographs is still unknown.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.82	8.00		5	0	22

281. DEVELOPING AN AMR SPECIFIC ENVIRONMENTAL RISK ASSESSMENT (ERA) FRAMEWORK

In the EU, ERA is required by EMA for pharmaceuticals when the predicted environmental concentration is greater than 10 ng/L. There is however an important concern that current methods and endpoints may not be protective of selection of AMR in the environment. The EC should set up a working group to propose adjustments to the current ERA approaches with regards to antibiotics.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.68	8.00		2	1	21

282. COORDINATION BETWEEN DIFFERENT LEGISLATIONS MOST NOTABLY UWWTD + IED +WFD

Importance of coordination with relevant groups in the scope of UWWTD update and IED + WFD, to incorporate AMR specific issues.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.81	7.00		6	0	22

283. ENVIRONMENT INTERNATIONAL

Include in the EU action plan the advocacy for international inclusion of the environmental component of AMR in international discussion and for the implementation of Codex Guidelines, including plants/ crops.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
6.62	7.00		1	0	22

284. ENVIRONMENT IN EU AND NAP

Fully include environment (water, manure, sewage, and use in plats/crops) in the EU Action plan and in NAPs, in line with the One Health approach (e.g. surveillance).

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
8.19	9.00		1	0	22

285. ENVIRONMENT IN NAP

Include an environmental component in the National Action Plans.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.53	8.00		3	0	22

286. ASSESS THE IMPACT OF AGRICULTURE IN AMR DEVELOPMENT

Examining the potential impact of the use of antifungals (not only azoles) on resistances (not only actual cases, but also potential cases). The impact on the release of these antimicrobials to the environment on AMR appearance, the scale of use across the EU and the potential impact on public health should be assessed.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.00	7.00		3	1	21

287. ASSESS THE RELEVANCE OF EXPECTED INCREASE IN USE OF BIOCIDES IN AMR DEVELOPMENT

The decrease in use of antimicrobials could be accompanied by an increased use of biocides. As biocides and AMR resistance genes are often in the same genetic treat and disseminate together, the research on AMR should keep vigilance of how the use of biocides could influence AMR generation and spreading.

· Track the use and sales of biocides for use in hospitals and animal health facilities.

· Look for possible links between biocides and AMR at the local scale.

MEAN	MEDIAN	DISTRIBUTION	CNR	MISSING DATA	NUMBER OF REPLIES
7.14	7.00		1	0	22

CONCLUSION

The subgroup established in 2022 under the EU AMR One Health Network to formulate suggestions for AMR actions came up with almost 300 proposals, that may provide the European Commission with a **useful "toolbox" with numerous and detailed proposals for concrete actions** that could be taken or coordinated at EU level to fight the growing public health threat that is AMR. These suggestions are accompanied by **additional information** to indicate how consensual these proposals are amongst MS, and which ones are deemed most important to prioritize. The subgroup believes these proposals will be helpful for the announced AMR policy initiative and beyond, as the EU cooperation on AMR deepens. They may also suggest ideas that could be integrated in the upcoming EU Joint Action on AMR.

It is however important to note that this subgroup was set up to be consultative, and that a deeper study of which measures can and should be implemented is needed.

The subgroup wishes to highlight the four key categories of priorities making up the Top 10% of proposals, namely:
- Strengthen data collection and AMR surveillance system;
- Ensure the availability and accessibility of antimicrobials;
- Develop guidelines, biosecurity measures and tools to help prevent the development and spread of infectious diseases in animals and support farmers in improving animal welfare as well as access to diagnostic tools;
- Develop EU guidelines and regulations to control (through a harmonised surveillance) and manage environmental pollution, notably from wastewater treatment plants and manufacturing sites.

The efforts invested by Member States demonstrate that MS are keen to collaborate with the European Commission and all relevant EU institutions and agencies to strengthen the fight against AMR at EU and global level. At the same time, the exercise also pointed out capacity limits from MS. The time and resources required by MS should be considered in planning any further activities.

The Steering Committee wishes to sincerely thank all participating Member States and their representatives for their hard work under a tight schedule, and for efficiently coordinating their positions between the human, animal and environmental sector in a "One Health" perspective.

ANNEXES

VOTING MEMBER STATES

Member States that participated (22 out of 27)		Member States that did not participate (5 out of 27)
Austria	Ireland	Croatia
Belgium	Italy	Greece
Bulgaria	Latvia	Malta
Cyprus	Lithuania	Romania
Czech Republic	Luxembourg	Slovenia
Denmark	Netherlands	
Estonia	Poland	
Finland	Portugal	
France	Slovakia	
Germany	Spain	
Hungary	Sweden	

DENMARK

Comments on the Top 10% analysis.

In response to this phrase: "It is interesting to note that the recommended actions that ranked in the Top 10% of the means mostly relate to the veterinary sector":

"As we have noted in our comments to the draft report, this may very well reflect a bias given that this area, and not human health, is under EU competence and thus it is more feasible to envision concrete EU policies that target the veterinary sector. It is not necessarily because the need is smaller in human health. This should be acknowledged."

In response to this phrase: "Additionally, the Top 10% suggestions highlight four key categories of priorities":

"Again, we have noted in our comments to the draft report that the inclusion of proposals in the Top 10% may be impacted by certain biases resulting from the methodology, which should also be acknowledged. Specifically, it seems that the large number of similar-sounding proposals on access to antibiotics that have all gotten high votes have crowded out other proposals from the Top 10% that might also have been relevant to highlight."

IRELAND

On the environmental side, representatives from Ireland were a little disappointed to see that any of the actions around environmental surveillance (e.g. #276, #277 and #279) did not win popular support (as a priority action). It seems a 'no brainer' that we leverage existing and well established legislation like the Water Framework Directive and associated monitoring and reporting technical standards to introduce the necessary AMR surveillance. This would be efficient and effective from a policy response perspective. One might hope that Action #267 can assist but it seems somewhat bland in ambition. These frailties seem not match the grand ambition of Action #284. How will we ever know the scale of the challenge if we are not looking for the evidence in a systematic way?

Under the Water Framework Directive (2000/60/EC) and the associated Commission implementing decision (EU) 2020/1161 introduced a requirement for a 'Watch List' programme of surface water monitoring. The **watch list** programme is to provide monitoring (exposure) data and analytical methods for chemicals and substances of potential (emerging) concern in the aquatic environment. See more there: [Chemicals - Water pollution - Environment - European Commission (europa.eu).](#)

Some antimicrobials are included in the current Watch List. However the substances being monitored are modest in number and the monitoring frequency and density are also modest in ambition. There is opportunity to ramp up the sophistication of this monitoring as well as the substances/compounds being monitored to include not only residues of Antimicrobials, but also, for example, to target ARG and ARB.   This would deliver the evidence we need to determine the role of the environment in development/transmission of AMR and thus the true scale of the challenge. The evidence will also be needed to inform appropriate interventions. This would have been our ambition for Actions #276, #277 and #279.

SPAIN

As a suggestion, the Steering Committee could have pooled and edited some of the 278 suggestions before sending it to Member States for rating. A reduced number of suggestions would have made the subsequent feedback and rating easier.

We believe it is more correct to include CNR replies in the total number of replies with the value zero. MS that have replied with CNR may not be able to specify if the suggestion applies in that sector or is not detailed enough for rating, so the value could be zero.

We have a concern regarding the proportion of proposals within the human health and veterinary sector, respectively within the "top ten percent". It is to be expected that the proposals included in the "top ten percent" list will garner the most attention among decision-makers. It could be interesting to keep in mind an additional analysis for each sector: all proposals could be ranked by sector, in order to classify all of them in three "top ten percent" as Human Health, Animal Health and Environmental Health. Additionally, the proposals classified as "Communication" and "One Health" were classified among the human health, animal health and environmental health sectors. Nevertheless, by this way, just two of 28 proposals in "top ten percent" relate to a Communication and One Health perspective. The "top ten percent" analysis by sectors could be extended to five, including Communication and One Health.

The impressive effort that MS have invested in the process of creating and taking forward the recommendations on concrete objectives and activities will save time for future activities. We hope that all the proposals out of the "top ten percent" will be considered for further strengthening the fight against AMR at European level.

Human sector:

Suggestion 140 has received high grading, and this item proposes development of "Common EU standards, guidelines, or if possible legislation". We would like to emphasise that no guideline is better than its implementation; it is more often so that the hurdle within IPC is the lack of compliance to already existing guidelines, not the lack of guidelines themselves. Continuous monitoring is necessary at national and local levels to ensure the implementation and compliance to existing and forthcoming guidelines.

Suggestion 24 regarding capacity development at international level was not highly prioritised among MS. Nonetheless, we would like to highlight the importance of having a global perspective when combatting AMR, and that structured support from the EU is crucial.

Environmental sector:

Suggestion 43. It is doubtful whether all listed actions are relevant. Monitoring potential sources so as to recue emissions is relevant but a general surveillance is not, as very low levels of antimicrobial residues may still lead to the selection of AMR and the potential range of samples and sample sites is almost endless. In addition, while for some medical substances (e.g. diclofenac), environmental risk assessment has been very important, such assessment as regards antimicrobials needs careful consideration due to the complex low-level effects. What is most important is to ensure no emissions during manufacture and addressing emissions in WWTPs for substances that are excreted in active form.

BELGIUM

Belgium would like to thank France and the other members of the steering group for having led this work. We acknowledge the fact that 19 and 22 out of 27 Member States provided suggestions and participated in the voting procedure, respectively. We support the feedback previously sent by Denmark and we would like to encourage decision-makers to not only focus on the suggestions included in the "top ten percent" list. The fact that similar suggestions were submitted to the vote (with minor variations) may have induced a bias. As an illustration, there were initially many suggestions in the field of communication/awareness/behaviour change. All of them obtained a median score of 7-8 but none appear in the "top ten percent" list. Globally, very interesting suggestions have been formulated and we believe that they will help the European Commission and Member States to design and implement concrete actions in the near future.

DENMARK

First of all, as feedback on the process of the subgroup, we would like to acknowledge the huge task solved by the subgroup in a very short time. However, the short timeframe and thereby short deadlines made it difficult for Member States to deliver well prepared One Health contributions. In light of the short deadlines it could have been beneficial if the Steering Committee had done some rough editing before Member States received materials for comments. As a suggestion, The Steering Committee could have pooled and edited some of the 278 suggestions before sending it to Member States for rating. We are aware, that this was done to respect each Member States contribution but a reduced number of suggestions would have made the subsequent feedback and rating easier.

The setup of having three online meetings during the work period was a good approach. However, as material was sent out shortly before the meeting, it was difficult to prepare for the meetings, especially coordination between national sectors was a challenge. Therefore, the meetings served more as a way for the Steering Committee to inform on the next steps and less as a possibility for the Member States to comment on the material and process.

In the view of the Danish health authorities, the decision of choosing not to amalgamate similar proposals introduces a serious source of bias into the final report.

It is to be expected that the proposals included in the "top ten percent" list will garner the most attention among decision-makers. Thus, the presence of many overlapping proposals that all gain a large Number of replies may skew the content of this list significantly. For instance, proposals that are variations over the theme of "access and availability of antibiotics" make up a large proportion of proposals in the "top ten percen"t: these occur once under "one health" (28), once under "veterinary sector" (181) and four times under "human and animal health" (247, 246, 245, 250). Thus they make up 21% of proposals in the "top ten percent" (27% if the environmental proposals are not included). While this in its own way highlights the fact that it is a significant issue (with which we fully agree), it is problematic for the overall process of formulating recommendations considering that there may be other important proposals that have ended up outside of the "top ten percent" because of a disproportionate amount of overlapping proposals, and thus will not receive attention. This issue should be addressed in the report. Ideally, we propose that the compilers of the report take it upon themselves to amalgamate similar proposals, after due consultation. We are aware of the time issues concerned, but believe that this is a necessary step, as failing to do so would be unsatisfactory and possibly detrimental to the overall result of the process.

In addition, we have a concern regarding the proportion of proposals within the human health and veterinary sector, resp. within the "top ten percent". There are four proposals focusing on human health and 12 focusing on the veterinary sector. It is not immediately possible to say whether this reflects the quantity or quality of the proposals, the magnitude of the challenges, or the practical possibilities for action on EU level in the respective sectors, or a combination of these factors. However, we have a concern that the results will lead to a special focus on the need for action in the veterinary sector which is not necessarily proportionate or supported by the methodology of the report, and a downplaying of the need for action in the human health sector. This issue should also be addressed in the report.

The mean and median is calculated with CNR response not included in the total number of replies (Excel regards CNR as a missing value). We believe it is more correct to include CNR replies in the total number of replies (n) e.g. with the value zero. One could argue that MS that have replied with CNR are not able to support the suggestion with the current wording/level of detail and therefore the value could be zero (at least for the purpose of calculation the mean and median).

FRANCE

As Chair of the subgroup established under the AMR One Health Network to formulate suggestions for AMR actions, France would first like to thank the members of the Steering Committee (SC) for their support throughout this work, as well as all the Member States that took part in this exercise. We acknowledge that the formulation and voting of almost 300 suggestions was a long and sometimes tedious task.

As a feedback on the process, we are aware that it would have been ideal to further sort and combine proposals that covered similar topics. Reducing the number of proposals would have indeed facilitated the vote of MS and the further treatment of data. However, the SC chose not to do so for two main reasons. First, we wanted to respect the work done by each MS. Second, it would have required a specific mandate as well as additional human resources, time and logistical support, which we did not have. The deadlines given to MS to proofread and make amendments were already quite short.

Although there is room for improvement, we hope that this collaborative work will contribute to further strengthening the fight against AMR at European level.

SWEDEN

Sweden wants to thank France for the tremendous effort you have invested in the process of creating and taking forward the recommendations on concrete objectives and activities to strengthen EU and Member States actions against AMR.

We very much appreciate the process, even though it has been challenging due to the short timeframes, for the including and transparent process, where all MS in a short period of time has had opportunity to put their views on the table. Additionally we acknowledge the ranking system for being a good and objective approach on what activities to focus on in the future work.

For future exercises of this kind, there are certain lessons to be learnt by this work. There is a need to have an adequate mandate to take decisions on the process of the work and to some extent the content of the proposals from the Member States. It could be considered if the handling of decisional issues by the Commission would have been more efficient. For instance, time could have been saved and results may have had higher quality if proposals on already existing activities had been removed from the long list of proposals as well as fusion of similar suggestions for activities against AMR.