Bridging the gap between humAn and animal suRveillance data, antibiotic poliCy, and stewardsHip

Document name	Protocol for developing a set of recommendations on how surveillance of resistance and monitoring of antimicrobial use should inform antibiotic stewardship in hospital, community and veterinary settings
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Author(s)	ARCH Teams UNIVR and UKET

REVISION HISTORY				
Revision	Date	Author	Organisation	Description
R1.0	24/05/19	ET, FA, MC, SG, FM, MDP	UNIVR, UKET	Protocol Draft
R1.1	11/06/19	FA, MC, FM, MDP, EC, MS, ET	UNIVR, UKET	Protocol Draft
R1.2	28/06/19	FA, MC, FM, MDP, EC, MS, ET	All	Protocol revision based on the comments
R1.3	24/07/19	FA, MC, FM, MDP, EC, MS, ET	All	Third protocol draft

Contents

1. BACKGROUND

ARCH has been awarded funding within the **JPIAMR 7th transnational call**: "2018 Network Call on Surveillance". **The ARCH Network** uniquely brings together multisector specialists and networks in the field of animal and human surveillance to bridge the gap between surveillance data of resistance and antibiotic consumption and stewardship in both compartments.

The group will finalise a series of recommendations **"Bridge the Gap: Survey to Treat"** specifically focused on:

- Hospital setting: settings with at-risk patients for antibiotic-resistant infections (i.e. intensive care units (ICU), hematology, transplant units, pediatric wards and emergency departments);
- Ambulatory: free-standing practices and hospital-associated outpatient clinics;
- Long-term care facilities (LTCFs): health care facilities for patients who require long term nursing or rehabilitation services;
- Veterinary: food- producing and companion animals.

The four white papers will be developed in the form of checklists (App and paper forms) summarizing the microbiological and antimicrobial data that are essential for antibiotic prescribing and drive stewardship recommendations.

2. INTRODUCTION

Antimicrobial stewardship (AMS) can be defined as a coherent set of actions which promote using antimicrobials in ways that ensure sustainable access to effective therapy for all who need them (1). Recommendations on how surveillance should be performed in order to provide data complying with AMS purposes and the way the microbiology laboratory should intertwine with stewardship interventions are fragmentary. Guidelines for stewardship in acute care hospitals mainly address the role of the clinical microbiology laboratory and antimicrobial resistance surveillance in terms of what the laboratory should provide and the utility of different strategies in producing appropriate reports on local resistance trends to optimize empiric antibiotic prescribing (2-5).

Compared with the acute-care setting, antimicrobial stewardship programs in LTCFs have tended to be less well-organized and less resourced. Despite the high prevalence of multi-resistant bacteria, local resistance data from LCTFs are rarely available (<20% of the cases in Europe) (6, 7). Moreover, they often lack on-site sampling equipment, which affects the quality of surveillance and the appropriateness of antibiotics prescription (8, 9).

Despite the fact that the majority of global antimicrobial prescribing is known to occur in outpatient settings (10, 11), there is limited guidance available on how general free-standing practitioners and other medical doctors involved in hospital-associated outpatient clinics could address surveillance to reduce inappropriate antimicrobial usage.

As is the case for the human field, stewardship programs have been implemented also in the animal setting, both in food-producing animals and in companion animals (12-14), suggesting that restriction of antimicrobial use is an effective method for reducing antimicrobial resistance (AMR) rates (15). Surveillance systems are available at different levels. For example, in livestock and their meat in Europe, there are European programs, industry funded supranational and national programs as antimicrobial resistance surveillance monitoring (16). Current obstacles for surveillance in animal population include heterogeneous sampling; testing and reporting modalities in AMR data and lack of consensual and harmonized technical methods and units that represent antimicrobial use (16). Another limit is the insufficient incentives to motivate primary producers to report their use of antibiotics and ultimately the lack of user-friendly technologies (i.e. limited automated digital data collection and open access to online data) (17). Of main concern is the unexplored field of surveillance data in companion animals and the scant evidence describing antimicrobial usage in companion animal primary care veterinary practices in many countries (18).

Major limitations to bridge the gap between surveillance data and antibiotic policy are the significant heterogeneity in data reporting among different countries and within the same country and the scarce connection between clinical prescribers and surveillance data providers. An additional concern is the poor coordination of surveillance systems of human antimicrobial use (AMU) and AMR surveillance with animal surveillance systems, leaving an open question as to the risk of spread of resistance among compartments and the consequent impact on antibiotic stewardship in human and animal populations (19). The importance on the One Health perspective is provided by the second joint report from the European Joint Interagency Antimicrobial Consumption and Resistance Analysis (JIACRA), an example of correlation between AMU and AMR in humans and food producing animals at European level (20).

This series of white papers tailored to different settings aims to improve reporting and clinical applicability of AMR and AMU surveillance data and to strengthen multidisciplinary cooperation and One Health approach (21). The feasibility of the recommendations will also be revised and optimized according to the heterogeneous economic settings including low and low-medium income countries and to contexts lacking expertise in surveillance and stewardship.

3. OBJECTIVE

The main aims of the project are: to provide new tools to strengthen the cooperation between surveillance and stewardship teams; to enable appropriate assessment of the AMU and AMR according to case-mix of patients and settings to develop antibiotic policy recommendations; to reduce heterogeneity of surveillance data reporting and; to promote interconnection between human and animal stewardship.

4. DESIGN

The project is conceived as an expert-based evaluation of current evidence, aimed at developing four sets of recommendations applicable to different settings (hospital, community, LTCFs and veterinary).

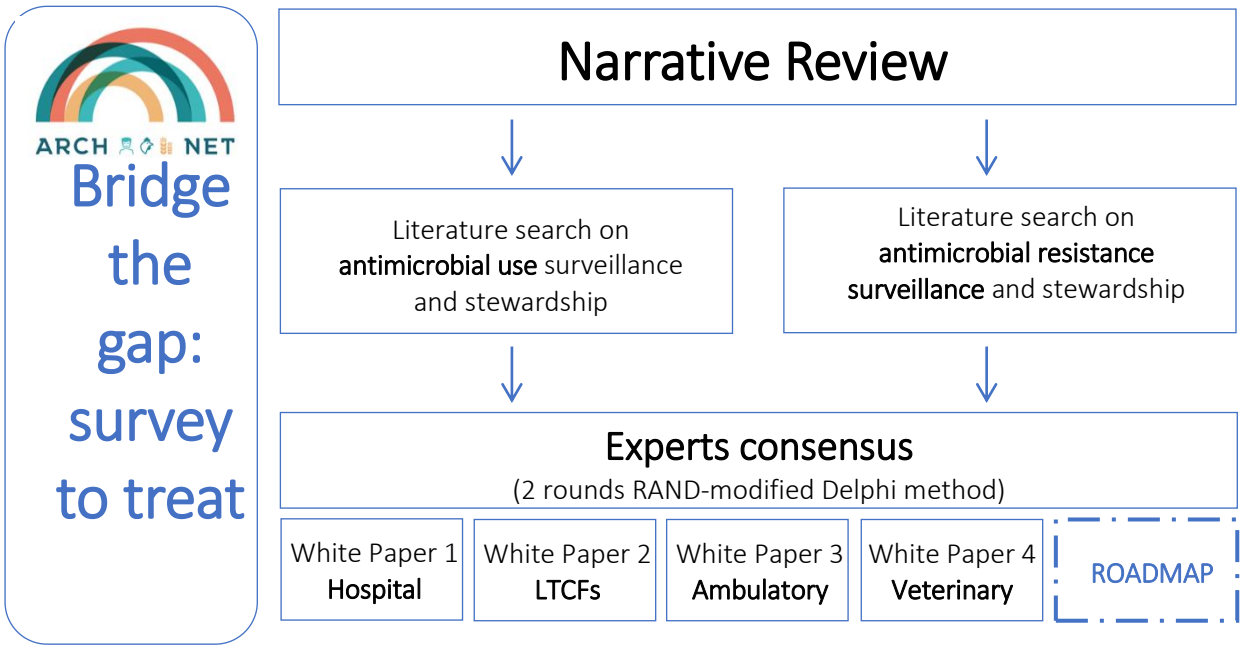
Table 1 summarizes the main steps of the project.

- **Expert group selection.** International experts have been selected to evaluate the results of the review and to define a set of relevant keystones to implement interconnection between the four settings. A conflict of interest form will be share with each participant before the consensus process is started (**Ongoing – to be completed by 16.08.2019**).
- **Review of the evidence.** Evidence will be collected through four separate reviews of studies and guidelines/recommendations assessing the reporting of AMR surveillance and antimicrobial consumption to inform AMS interventions. Each review aims at summarizing, in a narrative way, the key-questions to be considered for developing recommendations (**Ongoing – to be completed by 16.09.2019**)
- **Expert consensus.** A first proposal of recommendations will be evaluated by the expert group with a round of RAND-modified Delphi method (**to be completed by 30.09.2019**). After the first round, the recommendations will be presented in a two-day face to face meeting (**24-25.10.2019**) and the items with high disagreement among experts will be discussed in details. If necessary, a second round of RAND-modified Delphi will be conducted to reach consensus on all the recommendations (**November**).
- **Results delivery.** Four white papers and a scientific roadmap.

Table 1.

TASK	RESPONSIBLE	RECIPIENT	TIMELINE
Conflict of interest form	UNIVR	All Participants	To be sent by July
Review of the evidence (Guidelines + narrative review)	Chair, Co-chair and EPI-Net representer		09.09.19
First questionnaire	Chair, Co-chair and EPI-Net representer	All Participants	16.09.19
Deadline for answers	All Participants	UNIVR	30.09.19

Fig. 1 Project summary



4.1 Expert group selection

A panel of 30 leaders in infectious diseases, clinical microbiology, antimicrobial stewardship, veterinary medicine and public health has been contacted and assigned to four working groups, one for each setting. Each working group will be led by a chair and a co-chair who will assist the data extraction by providing feedback and support on main conflicting issues, will be responsible for the quality control of the final database and will lead the consensus on the key-questions of interest. The whole panel will participate in the final consensus (see paragraph 4.2 and section 8 for the actual group composition).

4.2 Expert consensus

The consensus will be reached through a two round RAND-modified Delphi approach based on the following steps:

1. Web-based survey. Each expert will receive the summary of the retrieved literature and the whole set of key-questions with the summary of the evidence grounding each recommendation. Recommendations will be graded according to the strength of the evidence and keeping into account criteria of feasibility and adaptability. Agreement will be expressed on a 9-point Likert scale and will be reached if the median score will be higher than 8 with at least 70% of the experts scoring in the highest tertile (i.e. scores of 7, 8 or 9).

2. Face-to-face discussion. A two-day face-to-face meeting will be held in Verona at the end of October. During the meeting experts will be presented with a summary of the retrieved evidence for each setting and the results of the web-based survey. Discussion will focus on recommendations not meeting the predefined threshold for relevance and content, trying to solve disagreement between experts. At the end of the

discussion experts will be asked to vote again for each recommendation and only recommendations meeting the pre-defined threshold will be included in the final documents.

Unresolved key-questions and recommendations not meeting the experts' agreement will be presented as topic for further research.

5. METHODOLOGY

5.1 Scoping review of the evidence

A comprehensive literature search will be conducted with the aim of selecting available evidence (studies, guidelines and recommendations) concerning the use of data from microbiological surveillance and antibiotic consumption to inform antimicrobial stewardship policies. The review will be conducted following a two-step process, first collecting and summarizing relevant guidance documents from scientific societies, national and international public health organisations. Secondly, a narrative review of the published literature will be conducted to assess the amount and the quality of the evidence in the four selected settings.

Inclusion criteria

- Studies published from 01/01/2009 to 01/06/2019 reporting antimicrobial consumption and antimicrobial resistance surveillance data in the hospital high risk setting, LTCFs, ambulatory care and veterinary setting;
- Studies focusing on healthy and diseased animals (food producing and companion animals); animal clinics;
- Full-text articles available;
- English language;
- All study design;
- References from systematic reviews, meta-analysis and retrieved articles will be checked for missed studies.

Exclusion criteria

- Studies performed in outbreak settings;
- Studies focusing on zoo animals/natural park animals;
- AMS studies not reporting antimicrobial resistance surveillance data or antibiotic consumption;
- Case control studies, case series, editorials, letters, and research protocols;
- *In vitro* studies;
- Studies on laboratory animals (experimental animals or animal models);

Definitions

- Free standing practices: general practitioners, family pediatricians, gynecologist, urologist, pneumologist, ent, internal medicine doctors, surgical practices;
- Hospital associated outpatient clinics: respiratory and digestive units where flexible endoscopes are used, dyalisis, hospital outpatients, reach outclinics in low- and medium income countries;
- Veterinary setting: farm (for food-producing animals), veterinary clinics (both for companion animals and food-producing animals), home (for companion animals). The sub-setting for food producing animals will include industrial and familiar holdings;
- Resistance detection criteria: CLSI and/or EUCAST;
- Resistance interpretation: cut-offs used in defining resistance (clinical breakpoints and/or ECOFF), phenotypic and/or molecular data as reported by the authors.

5.2 Sources of data and search strategy

A computerized literature search using MEDLINE (National Library of Medicine, Bethesda, MD, USA) will be conducted. Search terms are displayed in the following table.

Table 2. Search strings adapted to each setting

Hospital	For antimicrobial consumption: (antimicrobial OR antibiotic* OR antibacterial* OR anti-bacterial* OR antibacterial agents[MESH] OR antimycotic* OR antifungal* OR anti-fungal* OR antifungal agents[MESH]) AND (consumption OR consum* OR use OR usage OR prescribing OR prescrib* OR prescription*) AND ((hospital) OR (department) OR (ward) AND ((antimicrobial stewardship) OR (antibiotic stewardship) AND "last 10 years"[PDat] AND English[lang]) For antimicrobial resistance surveillance: (antimicrobial drug resistance[MESH] OR microbial sensitivity test[MESH]) AND (surveillance OR data OR (cumulative antibiogram) OR (report*)) AND ((hospital) OR (department) OR (ward) AND ((antimicrobial stewardship) OR (antibiotic stewardship)) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang])
LTCF	For antimicrobial consumption: (antimicrobial OR antibiotic* OR antibacterial* OR anti-bacterial* OR antibacterial agents[MESH] OR antimycotic* OR antifungal* OR anti-fungal* OR antifungal agents[MESH]) AND (consumption OR consum* OR use OR usage OR prescribing OR prescrib* OR prescription*) AND ((long term facilit*) OR (long-term care) OR (long term care) OR (nursing home*) OR (residential home) OR (rehabilitation facilit*) OR (rehabilitation centre*) OR (rehabilitation center*) OR veteran) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang]) For antimicrobial resistance surveillance: (antimicrobial drug resistance[MESH] OR microbial sensitivity test[MESH]) AND (surveillance OR data OR (cumulative antibiogram) OR (report*)) AND (residential facilities[MESH] OR (long term facilit*) OR (long-term care) OR (long term care) OR (nursing home*) OR (residential home) OR (rehabilitation facilit*) OR (rehabilitation centre*) OR (rehabilitation center*) OR veteran) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang])
Ambulatory	For antimicrobial consumption: (antimicrobial* OR antibiotic* OR antibacterial* OR anti-bacterial* OR antibacterial agents[MESH] OR antimycotic* OR antifungal* OR anti-fungal* OR antifungal agents[MESH]) AND (consumption OR consum* OR use OR usage OR prescribing OR prescrib* OR prescription* OR sale OR sales) AND ((ambulatory) OR (ambulatory care) OR (outpatient) OR (community medicine) OR (outreach clinic)) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang]) NOT Virus For antimicrobial resistance surveillance:

	(antimicrobial drug resistance[MESH] OR microbial sensitivity test[MESH]) AND (surveillance OR data OR (cumulative antibiogram) OR (report*)) AND (ambulatory care facility[MESH] OR community medicine OR (outpatient*)) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang]) NOT Virus
Veterinary	**For antimicrobial consumption**: antimicrobial* OR antibiotic* OR antibacterial* OR anti-bacterial* OR antibacterial agents[MESH] OR antimycotic* OR antifungal* OR anti-fungal* OR antifungal agents[MESH]) AND (consumption OR consum* OR use OR usage OR prescribing OR prescrib* OR prescription* OR sale OR sales) AND (animal[MeSH] OR animal*) (veterinary OR companion OR pet* OR livestock OR farm OR food production) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang]) **For antimicrobial resistance surveillance**: (antimicrobial drug resistance[MESH] OR microbial sensitivity test[MESH]) AND (surveillance OR data OR (cumulative antibiogram) OR report* OR monitoring OR prevalence*) AND (animal[MeSH] OR animal*) AND (veterinary OR companion OR pet* OR livestock OR farm OR food production) AND (full text[sb] AND "last 10 years"[PDat] AND English[lang])

5.3 Topics and variables

The review will address the following topics:

- LEADERSHIP COMMITMENT AND ACCOUNTABILITY: participants and Institutional support for the organisation and management
- ANTIMICROBIAL RESISTANCE SURVEILLANCE
- ANTIMICROBIAL USE

Variables to be extracted are summarized in the following tables differentiated by the setting.

Table 3. Variables collected according to each setting

<table>
<tr><th colspan="3">Hospital setting</th></tr>
<tr><th>Characteristic of the study</th><th>Setting and intervention characteristics</th><th>Antimicrobial usage</th></tr>
<tr><td rowspan="3">First author
Year of publication
Year of study
Country
Design</td><td rowspan="3">N° of hospitals or units
Hospital size
Hospital ownership (i.e. public, private)
Leadership commitment</td><td>Measurements (i.e. DDD, DOT, LOT)
Target antimicrobials (including antifungals)
Modalities and timing of reporting</td></tr>
<tr><td>Antimicrobial resistance surveillance</td></tr>
<tr><td>Target MDR bacteria
Target antibiotic and antifungals
Stratification criteria
Relevant thresholds
Modalities and timing of reporting
Reporting of screening isolates
Samples
Resistance detection criteria and interpretation</td></tr>
<tr><th colspan="3">LTCF setting</th></tr>
<tr><th>Characteristic of the study</th><th>Setting and intervention characteristics</th><th>Antimicrobial usage</th></tr>
<tr><td>First author
Year of publication
Year of study</td><td>LTCF type
LTCF size
LTCF ownership (i.e. public, private)</td><td>Measurements (i.e. DDD, DOT, LOT)
Target antimicrobials (including antifungals)
Modalities and timing of reporting</td></tr>
</table>

<table>
<tr><td rowspan="2">• Country
• Design</td><td rowspan="2">• Parameters describing the LTCF case mix
• Leadership commitment
• Reporting of vaccination coverage</td><td>Antimicrobial resistance surveillance</td></tr>
<tr><td>• Target MDR bacteria
• Target antibiotic and antifungals
• Stratification criteria
• Relevant thresholds
• Modalities and timing of reporting
• Reporting of screening isolates
• Samples
• Resistance detection criteria and interpretation</td></tr>
<tr><td colspan="3">Outpatient setting</td></tr>
<tr><td>Characteristic of the study</td><td>Setting and intervention characteristics</td><td>Antimicrobial usage</td></tr>
<tr><td rowspan="2">• First author
• Year of publication
• Year of study
• Country
• Design</td><td rowspan="2">• Ambulatory setting (free-standing or hospital-associated outpatient clinics)
• Ambulatory type (general practitioners, pediatrics, urology, etc.)
• Sample size
• Parameters describing the ambulatory care case mix (age, comorbidities, etc.)
• Leadership commitment
• Reporting of vaccination coverage</td><td>• Measurements (i.e. DDD, DOT, LOT)
• Target antimicrobials (including antifungals)
• Modalities and timing of reporting
Antimicrobial resistance surveillance
• Target MDR bacteria
• Target antibiotic and antifungals
• Stratification criteria
• Relevant thresholds
• Modalities and timing of reporting
• Reporting of screening isolates
• Samples
• Resistance detection criteria and interpretation</td></tr>
<tr><td colspan="3">Veterinary setting</td></tr>
<tr><td>Characteristic of the study</td><td>Veterinary setting and animal's characteristics</td><td>Antimicrobial usage</td></tr>
<tr><td rowspan="2">• First author
• Year of publication
• Year of study
• Country
• Design</td><td rowspan="2">• Veterinary setting (farm vs veterinary hospital/clinic vs home
• Setting size (i.e. number of centers)
• Veterinary sub-setting (industrial holdings vs familiar holdings)
• Animal type (food-producing animal including aquaculture vs companion animal)
• Animal species (cattle, pig, poultry, layer hen, turkey, dog, rabbit, cat…)
• Animal age classification/ production stage)
• Animal condition (healthy animal vs diseased animal)
• Infection type/ pathology
• Presence of connection with human antimicrobial consumption and resistance data
• Leadership commitment</td><td>• Measurements (i.e. DADD, PDD, UDD for consumption, mg/PCU for sales)
• Target antibiotic (including antifungals)
• Purpose of antimicrobial use (promoter usage vs prophylactic use vs therapeutic usage)
• Modalities and timing of reporting
Antimicrobial resistance surveillance
• Target MDR bacteria
• Target antibiotic and antifungals
• Stratification criteria
• Relevant thresholds
• Modalities and timing of reporting
• Reporting of screening isolates
• Samples
• Resistance detection criteria and interpretation</td></tr>
</table>

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5.4 Evidence synthesis

Key-questions and a first draft of the recommendations will be provided to the experts with a qualitative summary of the extracted evidence. Key-questions for which poor quality evidence or no evidence will be retrieved will be evaluated by the panel and expert-based recommendations or suggested as a topic for further research. All the recommendations will take into account the feasibility, sustainability and the adaptability to low-resourced settings.

5.5 Data extraction

All identified articles will be imported to ENDNOTE software X8 (Thomson Reuters, Toronto, CA, USA) and duplicates removed.

One reviewer will independently screen the retained articles against protocol eligibility criteria in two rounds, the first based on titles and abstracts and the second based on the full text article. The reason for exclusion will be noted. Any uncertainties will be resolved by a second reviewer. The protocol will be published on the ARCH website (archnet-surveillance.eu).

6. KEY QUESTIONS

A series of key-questions for each topic of interest will be developed inherent to the four different settings. The key questions will drive the data synthesis from the review of the guidelines. Uncovered domains in the guidelines will be searched in the public literature.

Moreover, strategies to implement the checklist in heterogeneous economic settings (e.g. low/middle income countries, environments lacking expertise in surveillance and stewardship).

The following tables summarizes examples of key questions from the first group brainstorming.

Table 4. Questions on topic 1 for human setting

LEADERSHIP COMMITMENT AND ACCOUNTABILITY FOR HUMAN SETTING	
Participants	Which health care professionals other than core members of the AMS team should be involved
Institutional support for the organisation and management of AMS programmes	Establishment of a legal framework, staffing requirements (such as full time equivalent);

246 Table 5. Questions on topic 1 for veterinary setting

LEADERSHIP COMMITMENT AND ACCOUNTABILITY FOR VETERINARY SETTING	
Participants	• Is a core member of the AMS team established? ➢ If yes, which health care professionals other than core members of the AMS team should be involved? ➢ If no, who should be the most appropriate participants of the AMS team? Who should be responsible for AMS activities? Would it be useful to identify a local/regional supervisor?
Target	• Is AMS tailored to diseased animals? ➢ If yes, would it be useful differentiate between food producing and companion animals? What should be the duties?
Institutional support for the organisation and management of AMS programmes	Establishment of a legal framework, staffing requirements (such as full time equivalent)

247

248 Table 6. Questions on topic 2 for human setting

ANTIMICROBIAL RESISTANCE FOR HUMAN SETTING	
Tracking	Identification of target MDR bacteria for surveillance: ➢ those with the highest burden of disease ➢ those that though rare have the greatest potential to harm patients in the future ➢ based on consequences to public health (people), to the animals and on economical considerations
	How to monitor resistance: ➢ Sample (including screening samples) ➢ Genotyping (when applicable/appropriate for example to track inter or intra-centre spread or to evaluate the prevalence data of drug resistance)
Reporting	Establishment of a time interval for reporting
	Define appropriate stratification criteria: ➢ by units/areas with major differences in the pattern of resistance ➢ addressing the most vulnerable patients
	Who should be the end user of the report
Action	Criteria to set thresholds for empirical antibiotic therapy and surgical prophylaxis
	Selective reporting

249 Table 7. Questions on topic 2 for veterinary setting

ANTIMICROBIAL RESISTANCE FOR VETERINARY SETTING	
Tracking	Identification of target MDR bacteria for surveillance: ➢ those with the highest burden of animal disease ➢ those that though rare have the greatest potential in the future ➢ based on consequences to public health (people), to the animals and on economical considerations
	How to monitor resistance: ➢ Sample (including screening samples) ➢ Interpretative criteria: ECOFF and clinical breakpoint ➢ Genotyping (when applicable/appropriate for example to track inter or intra-centre spread or to evaluate the prevalence data of drug resistance)
	Connection with human antimicrobial resistance
Reporting	Establishment of a time interval for reporting
	Define appropriate stratification criteria: ➢ by vet setting/sub-setting and animal characteristics (animal type/species/production stage) with major differences in the pattern of resistance ➢ addressing at-risk animal (i.e risk of transmitting resistance, risk of developing AMR infection, risk of becoming an animal reservoir and consequences to people, to the animal and on economical field)
	Who should be the end user of the report
Action	Criteria to set thresholds for empirical antibiotic therapy
	Selective reporting

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251 Table 8. Questions on topic 3 for human setting

ANTIMICROBIAL USE IN HUMAN SETTING	
Tracking	Which antibiotics should be monitored and how: ➢ those who are the worst culprits now (eg fluoroquinolones, 3d gen ceph in places with ESBLs) ➢ the most misused ➢ those with the highest future potential ➢ drugs of last resort
Reporting	Define a time interval for the report
	Who should be the end-user of the report

Action	Restrictive policy or other policies, if any
	Ranking for antibiotic use (i.e. criteria to drive de-escalation based on ecological considerations)

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253 Table 9. Questions on topic 3 for veterinary setting

ANTIMICROBIAL USE IN VETERINARY SETTING	
Tracking	Which antibiotics should be monitored and how: ➢ those who are the worst culprits now (eg fluoroquinolones, 3d gen ceph in places with ESBLs) ➢ the most misused ➢ those with the highest future potential ➢ drugs of last resort
	Define the purpose of antimicrobial use (promoter vs prophylactic vs therapeutic usage)
	Connection with human antimicrobial consumption
Reporting	Define a time interval for the report
	Define appropriate stratification criteria: ➢ by vet setting/sub-setting and animal characteristics (animal type/species/production stage)
	Who should be the end-user of the report
Action	Restrictive policy or other policies, if any
	Ranking for antibiotic use (i.e. criteria to drive de-escalation based on ecological considerations)

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255 ## 7. DELIVERABLES

256 A summary of recommendations with the methodology and results of the narrative review and expert
257 consensus will be reported in 4 separate white papers (one for each setting), to be sent for publication by
258 December 2019.
259 Research gaps highlighted by the review process and consensus will be fully reported and detailed in a final
260 scientific Road map for research. The document will be provided to inform the JPIAMR Strategies Research
261 Agenda (SRA) and major stakeholders and groups providing funding for AMR research. For the creation of a
262 strategic research agenda for surveillance and stewardship (ARCH-Net road map), a well-recognized or
263 accepted methodology for setting research priorities is needed.
264 A review of published and grey literature will be carried out to identify approaches, recommendations and
265 tools that are currently available to identify priority areas for research funding. A summary document of

these search results will be made available to help select the best method(s) and define steps involved in ARCH-Net road map development. Discussions during the ARCH-Net Workshop and preliminary results of the white papers will be incorporated in the priority list.

8. WORKING GROUPS (Chairs and EPI-Net representatives underlined)

Group 1. Hospital

Evelina Tacconelli, Maria Diletta Pezzani, Marc Mendelson, Thirumalaisamy P Velavan, Souha Kanj, Julia Bielicke, Nico Mutters, Petra Gastmeier, Christian Giske, Lorena López-Cerero, Andreas Voss, Roberto Cauda, Luigia Scudeller, Andreas Widmer, Elisabeth Presterl, Jean-Cristophe Lucet, Leonard Leibovici, Mical Paul, Elena Carrara, Liliana Galia, Marcella Sibani, Gunnar Kahlmeter.

Group 2. LTCF

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Group 3. Ambulatory

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Group 4. Veterinary

Elena Mazzolini, Monica Compri, Remco Schrijver, Nico Mutters, Alex Friedrich, Nithya Babu-Rajendran, Luigia Scudeller, Maurizio Sanguinetti, Rodolphe Mader.

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