DESIGN One Health AMR Partnership

General Consultation following the publication of the first draft of the Research and Innovation Objectives of the OHAMR Partnership

December 2022 – January 2023

DESIGN OH●AMR

Contents

Background

A Partnership on Antimicrobial Resistance

In 2021, the European Union (EU) launched "Horizon Europe", its framework funding programme for Research and Innovation. The creation of objective-driven and ambitious partnerships to support of EU policy objectives is one of the instruments deployed by EU in this framework programme. In June 2017, considering the emergency of antimicrobial resistance (AMR) (mainly antibiotic resistance) and its frightening consequences on Public Health the European Commission adopted the <u>EU One Health Action Plan against AMR</u>. "Boosting research, development and innovation" is one of the three main objectives of this action plan. The creation of a partnership "One-Health AMR" (OH AMR) aims to support the Research and Innovation objectives of the EU Action plan against AMR. The launch of the candidate partnership is expected in 2025.

Identification of Prioritised Research and Innovation Objectives for the candidate One Health AMR partnership SRIA

In 2022, the European Commission (EC) gave the mandate to the DESIGN OH-AMR Coordinating and Support Action (CSA) to prepare the launch of the candidate partnership. Among other tasks, the CSA is in charge of identifying the Research and Innovation Objectives of the future partnership (RIOS). After a series of preliminary consultations run in 2022 to collect a large input from the scientific community and stakeholders (Annex I. List of consultations), five thematic groups (Therapeutics, Diagnostics, Surveillance, Transmission & Evolution, Interventions for Prevention and Mitigation) were in charge of the redaction of the document (Annex II. Composition of the working groups). A first draft of the RIOs was published on December 5, 2022. Researchers, end-users, representatives of stakeholders, SMEs and Industries, Ministries, International Initiatives had the possibility to give their feedback on this first draft using an on-line survey tool (Annex III: Survey text).

The survey was opened until January 16, 2023 and was accessible through the following link: <u>https://survey.vr.se/Survey/81</u>8

This report presents the results of this survey. For GDPR reasons, we have left out the free-text answers.

The French National Research Agency (ANR) was in charge of carrying out this consultation, on behalf of the CSA.

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Overview of survey response demographics

Communication strategy

An important communication was done by the CSA to promote the survey. In particular, the publication of the first draft document presenting the RIOs and the opening of the survey was advertised on the JPIAMR website, on the JPIAMR social media & Newsletters, by direct mailing to stakeholders, funders, and country representatives who have shown an interest for the candidate One Health AMR Partnership. In addition, National representatives were encouraged to distribute widely the information at the national level (Mirror Groups, websites of national programs etc.). At the closure of the survey, 211 answers were received.

A word template of the survey could be downloaded and circulated for national consultation before submission.

Geographic profile

Responses were received from 35 countries localised in Europe (65%), Middle East (26%), Africa (2%), Asia (4%) and America (3%) (Figure 1). Almost 7% of the responders are from Low and Middle Income Countries.
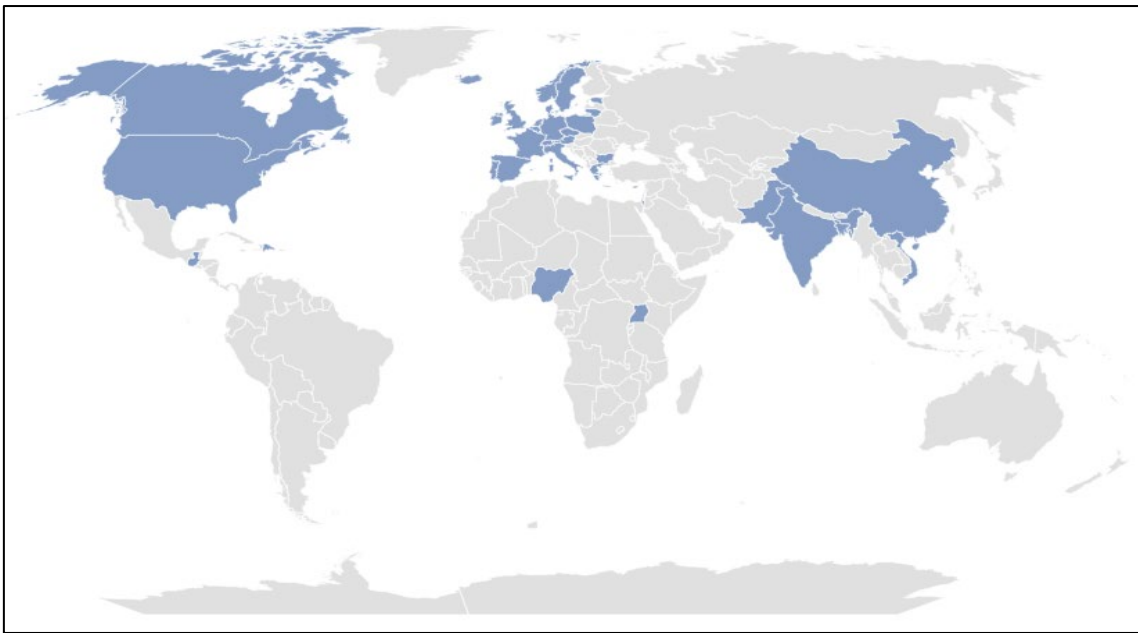
Figure 1. Geographic Distribution of the responders.

We note that the participation in some countries was particularly high in comparison of others; probably due to the efficient distribution of the survey at the national level (26% of the responders were from Israel, 15% from France).

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Institutions

Most of the responders are working in Universities and Research Institutes (51%), or in Hospital and University Hospitals (14%). In addition, some answers were received from ministries (8%), funding organisations (4%), industries and SMEs (6%), Policy and Public Agency (7%), NGO/association/foundation (4%), and International initiatives (1%) (Figure 2). Among the International initiatives, the Global Hub on AMR, CARB-X and ELIXIR participated in the survey. Interestingly, Ministries from both the Health sector, and the Agricultural and food sector answered the survey (Figure 3).
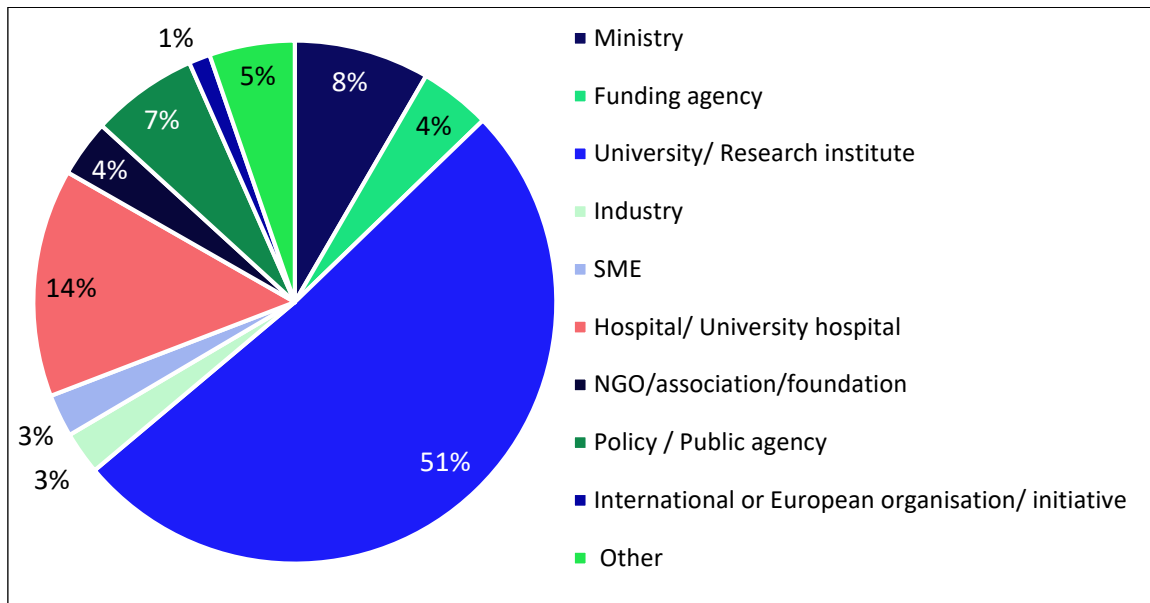
Figure 2. Institution origin of the responders.
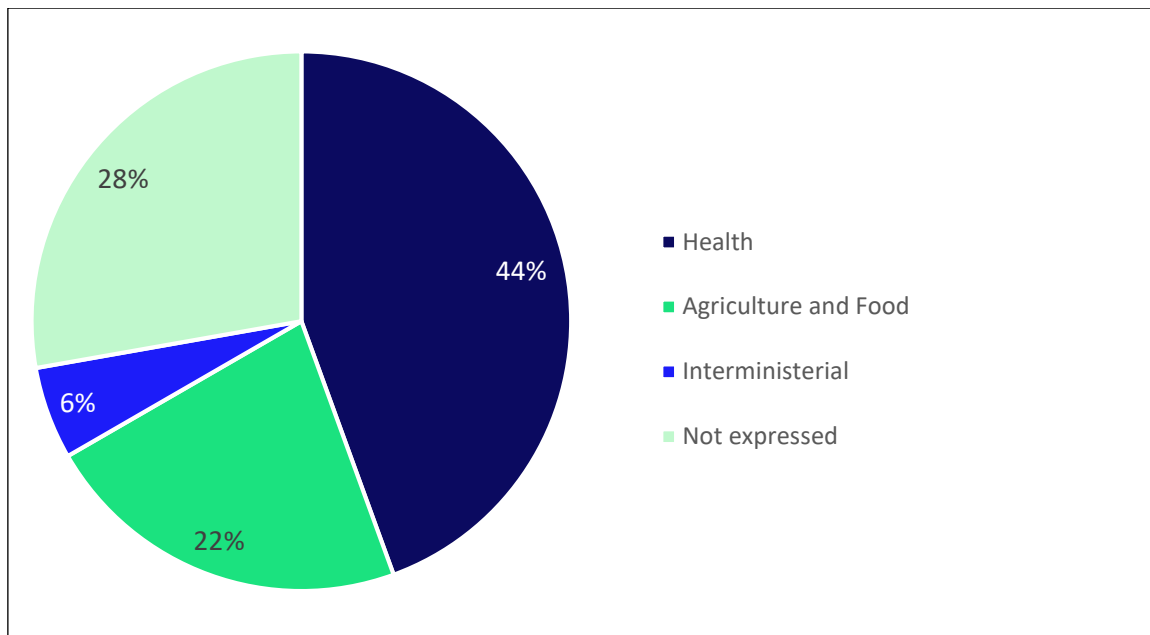
Figure 3. Profile of the participating ministries.

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Thematic areas and cross-cutting issues

Responders had the possibility to choose on which thematic area (s), and/or on which cross-cutting issue(s) they wanted to provide feedback. In average, the responders gave their feedback on 2.4 thematic areas, and 1.7 crosscutting issues, but the profile is different between individual researchers who were more prone to give feedback on specific topics, and ministries and stakeholders who generally covered all the thematic areas and crosscutting issues (Figure 4 and 5).
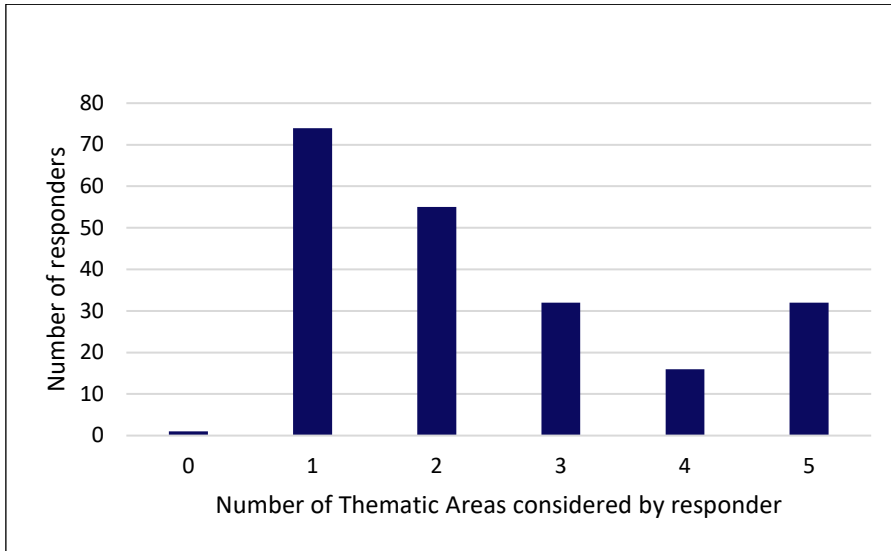
Figure 4. Distribution of the number of thematic areas considered by each individual responder.
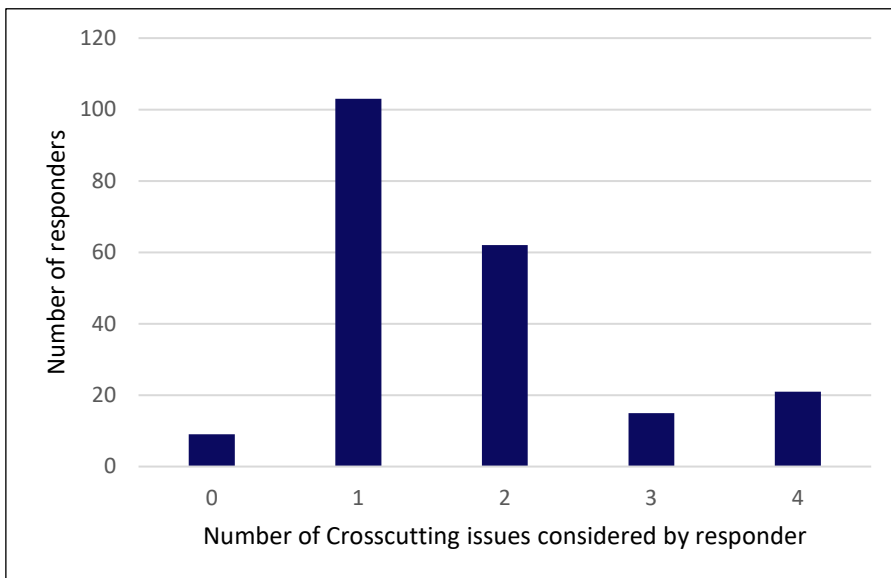
Figure 5. Distribution of the number of crosscutting issues considered by each individual responder.
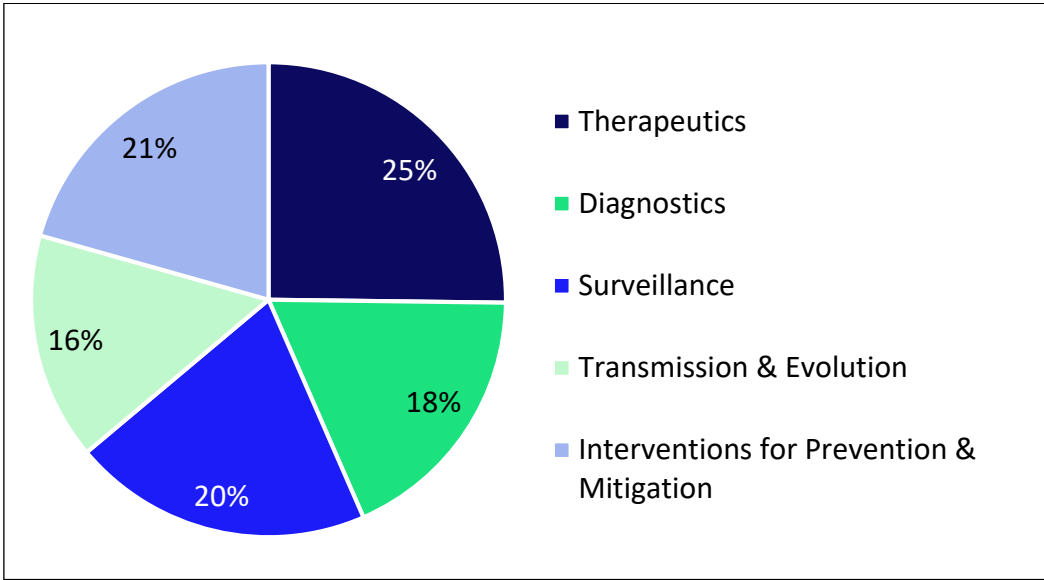
Figure 6. Coverage of the five thematic areas by the responders. In average, each thematic area received 100 answers.
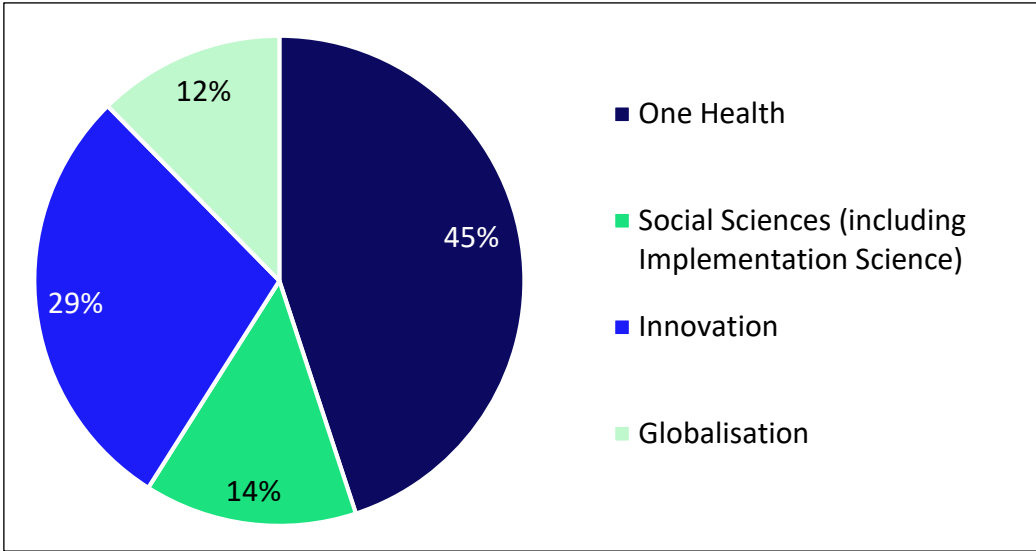
Figure 7. Coverage of the four crosscutting by the responders. Each crosscutting issue received between 40 and 160 answers.

Therapeutics

60% of the responders gave an input on the Therapeutics chapter.

Prioritisation among the four proposed Research and Innovation objectives

Responders were asked to indicate the importance of the research and innovation objectives. Results are indicated in Table 1.

Table 1. Importance of the four research and innovation objectives in the area of therapeutics.

|	Identify new antimicrobials, novel alternatives for antimicrobials, and improved delivery methods	Unlock the unexplored potential of existing and neglected antimicrobials by improving PK/PD and enabling repurposing and combination therapies	Develop methods to facilitate the approval and registration of new antimicrobial agents or novel therapeutic strategies.	Develop strategies to minimise the structural and economic barriers to research and, development, availability and access of new therapies and alternative strategies
Not so important	4	15	14	12
important	13	52	60	37
Very important	110	58	52	77
Not expressed	0	2	1	1

Interestingly, the four research and innovation objectives proposed are considered important or very important for almost 90% of the responders (89%). The objective which seems to be the most important for the research community is the identification of new antimicrobials, novel alternatives for antimicrobials, and improved delivery methods (87% of the responders estimate this objective as a very important one).

Missing topics to be addressed in the therapeutics chapter

63% of the responders considerer that nothing essential is missing in the chapter.

37% of the responders indicated that something essential is missing. The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Diagnostics

44% of the responders gave their input on the Diagnostics chapter.

Prioritisation among the three proposed Research and Innovation objectives

Responders were asked to indicate the importance of the research and innovation objectives. Results are indicated in Table 2.

Table 2. Importance of the three research and innovation objectives in the area of diagnostics.

	Discover, design and evaluate new diagnostics and improve the efficacy of existing ones	Evaluate field performance, feasibility and impact of diagnostics	Identify and overcome barriers for implementation and acceptance of diagnostics
Not so important	2	2	6
Important	22	38	33
Very important	67	51	52
Not expressed	1	1	1

Interestingly, the three research and innovation objectives proposed are considered important or very important for at least 92% of the responders. The objective which seems to be the most important for the research community is the discovery, design and evaluation of new diagnostics, and the improvement of the efficacy of the existing ones (73% of the responders estimate this objective as a very important one).

The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Surveillance

49% of the responders gave their input on the Surveillance chapter.

Prioritisation among the four proposed Research and Innovation objectives

Responders were asked to indicate the importance of the research and innovation objectives. Results are indicated in Table 3.

Table 3. Importance of the four research and innovation objectives in the area of Surveillance.

	Optimise, standardise, and harmonise AMR & antimicrobial use/antimicrobial consumption surveillance protocols to achieve or improve cross-compatibility of surveillance systems	Identify reservoirs and transmission pathways of AMR in and between humans, animals and the environment to enable risk assessment and guide preventative actions	Optimise the use of surveillance data to estimate the burden of resistance, assess the impact of interventions and enable policy and practice action	Develop strategies and methods to promote the exchange, interpretation and communication of surveillance data
Not so important	5	3	0	5
Important	25	32	27	39
Very important	72	66	75	58
Not expressed	1	2	1	1

Interestingly, the four research and innovation objectives proposed are considered important or very important for at least 95% of the responders. The objective which seems to be the most important for the research community is the optimisation of the use of surveillance data to estimate the burden of resistance, assess the impact of interventions and enable policy and practise action (70% of the responders estimate this objective as a very important one).

Missing topics to be addressed in the surveillance chapter

72% of the responders considerer that nothing essential is missing in the chapter.

28% of the responders indicated that something essential is missing. The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Transmission and Evolution

37% of the responders gave their input on the Transmission and Evolution chapter.

Prioritisation among the 3 proposed Research and Innovation objectives

Responders were asked to indicate the importance of the research and innovation objectives. Results are indicated in Table 4.

Table 4. Importance of the three research and innovation objectives in the area of Transmission and Evolution.

	Identify the main environments, mechanisms and drivers involved in the emergence of successful antimicrobial-resistant genotypes of different disease-causing microorganisms	Understand the directionality and scale of transmission of resistant microorganisms in and between humans, animals, and the environment, and identify critical routes and underlying drivers of transmission.	Identify, design and evaluate technical and social interventions to control the emergence and transmission of resistance based on an understanding of the relative importance of different sources and drivers
Not so Important	3	1	1
Important	17	18	17
Very Important	58	59	59
Not expressed	0	0	1

Interestingly, the three research and innovation objectives proposed are considered important or very important for at least 96% of the responders. The 3 proposed objectives seem to have the same relative importance for the scientific community (74/75% of the responders estimate that the objectives are very important).

Missing topics to be addressed in the Transmission & Evolution chapter

79% of the responders considerer that nothing essential is missing in the chapter.

21% of the responders indicated that something essential is missing. The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Interventions for prevention and mitigation

50% of the responders gave their input on the Intervention chapter.

Prioritisation among the four proposed Research and Innovation objectives

Responders were asked to indicate the importance of the research and innovation objectives. Results are indicated in Table 5.

Table 5. Importance of the four research and innovation objectives in the area of Interventions for prevention and mitigation.

	Evaluate opportunities, acceptability and feasibility of interventions in different countries/local contexts.	Design and test interventions based on new and existing evidence and new technologies to prevent and mitigate AMR	Estimate the impact and cost-effectiveness of new interventions and prevention strategies	Identify the parameters that should be considered to adapt a successful intervention to different settings, or to scale up interventions
Not so Important	2	0	7	3
Important	43	23	37	42
Very Important	59	81	59	59
Not expressed	0	0	1	0

Interestingly, the four research and innovation objectives proposed are considered important or very important for at least 93% of the responders. The objective which seems to be the most important for the research community is the design and test of interventions based on new and existing evidence and new technologies to prevent and mitigate AMR (78% of the responders estimate this objective as a very important one).

Missing topics to be addressed in the Intervention chapter

74% of the responders considerer that nothing essential is missing in the chapter.

26% of the responders indicated that something essential is missing. The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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One Health (crosscutting issue)

76% of the responders gave their feedback on the One Health aspects developed in this document.

The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Social Sciences – including implementation science (crosscutting issue)

24% of the responders gave their feedback on the social sciences aspects developed in this document.

The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

Innovation (crosscutting issue)

47% of the responders gave their feedback on the innovative aspects developed in this document.

The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Globalisation (crosscutting issue)

20% of the responders gave their feedback on the innovative aspects developed in this document.

The free-text suggestions have been considered for the revision of the Research and Innovation Objectives document.

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Annex I. List of consultations

Topic	Activities	Dates	Targeted Audience	Expected Outputs
Initial General Consultation	Survey	15/03/22 to 19/04/22	Ministries, Stakeholders, Researchers, SME and Large enterprises	Feedback on the current JPIAMR SRIA as a point of reference
Second General Consultation	Survey	01/12/22 to 16/01/23	Ministries, Stakeholders, Researchers, SME and Large enterprises	Feedback on the first draft of the research and innovation objectives of the One Health AMR Partnership
Surveillance	Workshop	23/03/22 and 24/03/22	Ministries, Stakeholders, Researchers, SME and Large enterprises	Feedback on the surveillance thematic area
Intervention & Prevention	Round-Tables	13/06/22 and 14/06/22	Ministries, Stakeholders, Researchers, SME and Large enterprises	Feedback on the "Intervention and Prevention" Thematic Area
Antibacterial Resistance	Webinar	09/06/22	Early Career Scientists	New perspective on antibacterial resistance
Antifungal Resistance	Webinar	23/06/22	Ministries, Stakeholders, Researchers, SME and Large enterprises	Needs and Gaps on antifungal resistance
Antiparasitic resistance	Surveys / Round-Tables	04/05/22 to 21/06/22 / 15/09/22	National Representatives/ research funders and Stakeholders / Potential members of the OH-AMR Partnership	National willingness to include antiparasitic resistance in the scope of the One Health AMR partnership, mapping of the national funders able to fund research projects on antiparasitic resistance, mapping of the current national and international funding on antiparasitic resistance, identification of the research gaps and needs in antiparasitic resistance.
Antiviral resistance	Surveys / Round-Tables	04/05/22 to 21/06/22 / 15/09/22	National Representative/ research funders and Stakeholders / Potential members of the OH-AMR Partnership	National willingness to include antiviral resistance in the scope of the One Health AMR partnership, mapping of the national funders able to fund research projects on antiviral resistance, mapping of the current national and international funding on antiviral resistance, identification of the research gaps and needs in antiviral resistance.
Vaccination	Webinar	17/06/22	Ministries, Stakeholders, Researchers, SME and Large enterprises	Role of the vaccination in antibacterial resistance prevention; Needs and Gaps regarding vaccination against bacterial diseases
Innovation in Therapeutics and Diagnostics	Round-Tables	21/06/22 and 22/06/22	Innovation funders, Ministries, Stakeholders, Researchers, SME and Large enterprises	Actions to be undertaken in the OH AMR Partnership to support innovation

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Topic	Activities	Dates	Targeted Audience	Expected Outputs
Social Sciences	Working Group Webinar	During the whole consultation process 10/01/2023	Researchers in social sciences	Understand and evaluate the contribution of the social aspects in the prevention and control of AMR
Environment	Round-Tables	22/09/22 to 27/09/22	Participants of the 6th scientific meeting on Environmental Dimension of Antibiotic Resistance (EDAR6)	Needs and Gaps related to environmental diffusion of AMR
Stakeholders	Meeting	June 2022 and January 2023	Stakeholder Network	Practitioners needs Feedback on draft of research objectives

Annex II. Composition of the working groups

List of the experts involved in the five thematic groups (by alphabetic order):

- Ana Alastruey-Izquierdo, Instituto de Salud Carlos III, Spain
- Dan Andersson, University of Uppsala, Sweden
- Till Bachmann, University of Edinburgh, United Kingdom
- Rafael Cantón, University Hospital Ramón y Cajal and Complutense University, Spain
- Teresa Coque, Ramón y Cajal Institute for BioHealth Research (IRYCIS), Spain
- Tania Dottorini, University of Nottingham, United Kingdom
- Uga Dumpis, Pauls Stradiņš University Hospital, Latvia
- Sabiha Essack, University of KwaZulu Natal, South Africa
- Christian Giske, Karolinska Institute, Sweden
- Bruno Gonzalez Zorn, Complutense University, Spain
- Luca Guardabassi, University of Copenhagen, Denmark
- Claire Harpet, Lyon 3 University, France
- Tom Harrison, St George's University of London, United Kingdom
- Elena Ivanova Reipold, Foundation for Innovative New Diagnostics, Switzerland
- Geetanjali Kapoor, Center for Disease Dynamics, Economics & Policy, India
- Joakim Larsson, University of Gothenburg, Sweden
- Marc Lemonnier, Antabio, France
- Nilton Lincopan, Universidade de São Paulo, Brazil
- Jean-Yves Madec, ANSES, France
- Christian Menge, Friedrich Loeffler Institute, Germany
- Chantal Morel, University of Geneva, Switzerland
- Katherine Payne, University of Manchester, United Kingdom
- Luísa Vieira Peixe, University of Porto, Portugal
- Priscilla Rupali, Christian Medical College (CMC), Vellore, India
- Etienne Ruppé, University Hospital Bichat and University of Paris, France
- Jonathan Rushton, University of Liverpool, United Kingdom
- Constance Schultsz, University of Amsterdam, The Netherlands
- Kornelia Smalla, Julius Kühn Institute, Germany
- Jordi Vila, Hospital Clinic in Barcelona, University of Barcelona and Institute for Global Health, Spain

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Annex III. Survey text

Short introduction to the survey

Thank you for participating in this open consultation to support the development of the Research and Innovation Objectives for the candidate One Health AMR Partnership.

The candidate One Health AMR (OH AMR) Partnership is to be launched in 2025 for a duration of seven years. The Research and Innovation Objectives presented here will define the scientific perimeter of the partnership and will guide the scope of activities that will be supported in the framework of the partnership. The objectives have been developed from a series of consultations organised between March and June 2022.

This survey asks the scientific community and AMR stakeholders about the relevance of the identified objectives and potential gaps.

While answering this survey, we like you to know that other European partnerships and programs will tackle some research and innovation objectives on AMR. For example, AMR issues impacting livestock will be the subject of the European Partnership on Animal Health and Welfare. The OH AMR Partnership will work in collaboration with these other initiatives.

- Please find the draft *Research and Innovation Objectives* document here.
- The consultation is open until January 16th, 2023.
- The online consultation outcome will guide the development of the *Research and Innovations Objectives* that will be included in the *OH AMR Strategic Research and Innovation Agenda*.
- Please note that the survey ultimately has to be completed online (for example by your national contact person). The online survey is found here.
- For more information about the candidate OH AMR Partnership, please visit www.ohamr.eu.
- For questions regarding the consultation, please reach out to secretariat.jpiamr@vr.se.

Your input is valuable in preparing the future OH AMR Partnership!

We thank you for participating in this survey!

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Survey Part 1: Profile of the responder

1. Country of person/group submitting feedback:
2. Affiliation of person/group submitting feedback:

   ☐ Ministry

   ☐ Funding agency

   ☐ University/ Research institute

   ☐ Industry

   ☐ SME

   ☐ Hospital/ University hospital

   ☐ NGO/association/foundation

   ☐ Policy / Public agency

   ☐ International or European organisation/ initiative

   ☐ Other

   If other, please specify:

3. Gender

   ☐ Male

   ☐ Female

   ☐ Other

4. If you answer this survey on behalf of your Institution/organisation: Name of institution/group that you are representing:

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5. On which thematic area do you wish to provide feedback (you can select multiple thematic areas)?

☐ Therapeutics

☐ Diagnostics

☐ Surveillance

☐ Transmission & Evolution

☐ Interventions for Prevention & Mitigation

6. On which cross-cutting issue do you want to provide feedback (you can select multiple issues)?

☐ One Health Approach

☐ Social Sciences (including Implementation Science)

☐ Innovation

☐ Globalisation

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Survey Part 2: Research and Innovation objectives/Thematic Areas

Therapeutics

The goal of the Therapeutics thematic area is to improve current antimicrobial therapies by enhancing discovery, preclinical and early clinical development of novel antimicrobial treatment strategies, exploring the repurposing of existing drugs as well as by optimising drug delivery and treatment protocols. An additional aim is to initiate research into the possibilities and effects of minimising barriers for the introduction of novel antimicrobial agents and therapeutic alternatives by proposing innovative regulatory procedures and alternative economic models to stimulate AMR innovation while ensuring a high level of acceptability to end-users, appropriate use through antimicrobial stewardship and minimal impact on the environment.

7. Please rate the research and innovation objectives of the Therapeutics chapter according to importance to the AMR Research and Innovation landscape

	Not so important	*Important*	*Very important*
1. Identify new antimicrobials, novel alternatives for antimicrobials, and improved delivery methods	☐	☐	☐
2. Unlock the unexplored potential of existing and neglected antimicrobials by improving PK/PD and enabling repurposing and combination therapies	☐	☐	☐
3. Develop methods to facilitate the approval and registration of new antimicrobial agents or novel therapeutic strategies.	☐	☐	☐
4. Develop strategies to minimise the structural and economic barriers to research and, development, availability and access of new therapies and alternative strategies	☐	☐	☐

8. Do you consider that anything essential is missing in the Therapeutics chapter?

☐ *Yes*
☐ *No*

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9. If Yes, please specify what is missing, 30 words max

10. Do you have any other comments on the Therapeutics chapter? (40 words max)

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Diagnostics

The goal of the Diagnostics thematic area is to stimulate the design, development, evaluation and implementation of diagnostics to ensure appropriate use of antimicrobials in the treatment of bacterial and fungal infections. Appropriate diagnostic tools can also be used to support interventions to tackle AMR, including infection prevention and control, and antimicrobial stewardship. In infectious disease, diagnostics are most commonly used to identify which pathogen(s) are causing symptoms. Diagnostics are typically used to identify a disease or its cause and are considered in all three One Health settings, including the emerging topic of environmental diagnostics. Of particular interest are infections caused by antimicrobial-resistant pathogens of clinical importance. Tests allowing rapid detection of drug susceptibility are required to support rational clinical decision-making and stewardship, leading to a more targeted and sustainable use of antimicrobials in all One Health settings.

11. Please rate the Research and Innovation Objectives of the Diagnostics chapter according to importance to the AMR Research and Innovation landscape

	Not so important	*Important*	*Very important*
1. Discover, design and evaluate new diagnostics and improve the efficacy of existing ones	☐	☐	☐
2. Evaluate field performance, feasibility and impact of diagnostics	☐	☐	☐
3. Identify and overcome barriers for implementation and acceptance of diagnostics	☐	☐	☐

12. Do you consider that anything essential is missing in the Diagnostics chapter?

☐ *Yes*
☐ *No*

13. If Yes, please specify what is missing, 30 words max

14. Do you have any other comments on the Diagnostics chapter? (40 words max)

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Surveillance

The goal of this priority area is to strengthen the research on surveillance systems, methods, interpretative guidelines, and communication tools to optimise the surveillance of AMR and antimicrobial use and consumption (AMU/AMC) using a One Health approach, in order to inform the prevention and treatment of infections in humans, animals and crops. Surveillance may also serve as an indicator to assess the impact of interventions to mitigate AMR and inappropriate AMU in humans, animals, crops and the environment.

15. Please rate the research and innovation objectives of the Surveillance chapter according to importance to the AMR Research and Innovation landscape

	Not so important	*Important*	*Very important*
1. Optimise, standardise, and harmonise AMR & antimicrobial use/antimicrobial consumption surveillance protocols to achieve or improve cross-compatibility of surveillance systems	☐	☐	☐
2. Identify reservoirs and transmission pathways of AMR in and between humans, animals and the environment to enable risk assessment and guide preventative actions	☐	☐	☐
3. Optimise the use of surveillance data to estimate the burden of resistance, assess the impact of interventions and enable policy and practice action	☐	☐	☐
4. Develop strategies and methods to promote the exchange, interpretation and communication of surveillance data	☒	☐	☐

16. Do you consider that anything essential is missing in the Surveillance chapter?

☐ *Yes*
☐ *No*

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17. If Yes, please specify what is missing, 30 words max

18. Do you have any other comments on the Surveillance chapter? (40 words max)

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Transmission & Evolution

The goal of the Transmission & Evolution thematic area is to understand and prevent the transmission and evolution of antimicrobial resistance in a One Health Context. Over time microorganisms may accumulate antimicrobial resistance determinants by horizontal acquisition of genes, by mutations in pre-existing DNA, and by epigenetic phenomena. Understanding the mechanisms involved and identifying the underlying drivers and conditions that favour such evolution are necessary in order to identify the most efficient ways to prevent or delay the emergence of new, successful, disease-causing resistant strains. A parallel and intertwined process is the transmission of resistant strains, facilitated by or independent of changes in the genetic repertoire of the microorganisms. Exposure to selective agents, including antimicrobials, may boost both transmission of the microorganisms and their evolution. Alternatives to reducing the exposure to antimicrobials and other co-selective agents, such as improved hygiene and sanitation, may be even more critical countermeasures in many situations. A One Health approach that considers the evolution and transmission of microorganisms and their antimicrobial resistance determinants, within and between humans, animals and the environment, is needed to fully address the complexity of the challenge. This approach also covers research in the broader social sciences domain, to understand ultimate drivers and to help design effective interventions adapted to different settings and geographical variations.

19. Please rate the research and innovation objectives of the Transmission chapter according to importance to the AMR Research and Innovation landscape

	Not so important	*Important*	*Very important*
1. Identify the main environments, mechanisms and drivers involved in the emergence of successful antimicrobial-resistant genotypes of different disease-causing microorganisms	☐	☐	☐
2. Understand the directionality and scale of transmission of resistant microorganisms in and between humans, animals, and the environment, and identify critical routes and underlying drivers of transmission.	☐	☐	☐
3. Identify, design and evaluate technical and social interventions to control the emergence and transmission of resistance based on an understanding of the relative importance of different sources and drivers	☐	☐	☐

20. Do you consider that anything essential is missing in the Transmission & Evolution chapter?

☐ *Yes*
☐ *No*

21. If Yes, please specify what is missing, 30 words max

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22. Do you have any other comments on the Transmission & Evolution chapter? (40 words max)

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Interventions for prevention & mitigation

The goal of the Interventions thematic area is to reduce the emergence and spread of AMR using One Health interventions. In this context, interventions refer to all strategies, tools, programmes and actions that prevent or reduce the incidence, prevalence and dissemination of AMR. This can be through measures including infection prevention and control, promotion of responsible antimicrobial use, strengthening of health systems, promotion of vaccine uptake, community engagement for rational antimicrobial use, sustainable agricultural practices, prevention of environmental contamination with antimicrobials from various sources and public health measures such as water, sanitation and hygiene.

As reinforced by the COVID-19 pandemic, AMR prevention and interventions can fail unless these are addressed on a global and systemic scale. Interventions should involve relevant stakeholders and should pay particular attention to challenges in different geographical and cultural contexts, resourcing and contextual feasibility, and cost-effectiveness.

23. Please rate the research and innovation objectives of the Interventions chapter according to importance to the AMR Research and Innovation landscape

	Not so important	Important	Very important
1. Evaluate opportunities, acceptability and feasibility of interventions in different countries/local contexts.	☐	☐	☐
2. Design and test interventions based on new and existing evidence and new technologies to prevent and mitigate AMR	☐	☐	☐
3. Estimate the impact and cost-effectiveness of new interventions and prevention strategies	☐	☐	☐
4. Identify the parameters that should be considered to adapt a successful intervention to different settings, or to scale up interventions	☐	☐	☐

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24. Do you consider that anything essential is missing in the Interventions for prevention & mitigation chapter?

☐ *Yes*
☐ *No*

25. If Yes, please specify what is missing, 30 words max

26. Do you have any other comments on the Interventions for prevention & mitigation chapter? (40 words max)

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Survey Part 3: Crosscutting issues

One Health Approach:

According to the One Health High-Level Expert Panel of the United Nations, "One Health stands for an integrative and systemic approach to health, grounded on the understanding that human health is closely linked to the healthiness of food, animals and the environment, and the healthy balance of their impact on the ecosystems they share, everywhere in the world." Within the candidate One Health AMR partnership framework, the scope of One Health will be the contributions of antimicrobial use and spread of AMR between humans, animals, plants and the environment to the consequences on human health. Please note that questions specifically related to AMR in food producing animals will be tackled in the candidate European Partnership on Animal Health and Welfare (EUP AH&W).

27. Do you consider that anything essential is missing regarding the One Health approach in the document? (Please specify in which thematic area this should be addressed, max 100 words.)

28. Do you have any other comments regarding One Health approach? (Max 100 words)

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Social Sciences (including Implementation Science)

The social science disciplines can offer an understanding of the phenomenon of antimicrobial resistance as a social issue that is affected by behaviour, law, culture, ethics, management science, etc. This plurality of approaches within the social sciences places them front and centre of any meaningful plan to address AMR. The candidate One Health AMR partnership intend to encourage multi- and inter-disciplinary research across the social and life sciences. The partnership will also encourage inclusion key stakeholders and implementation science to facilitate the uptake of research results and guide policy. Please note that implementation of the research results will be tackled by other programs, such as the second Joint Action on Antimicrobial Resistance (JAMRAI2)

29. Do you consider that anything essential is missing regarding social sciences aspects in the document? (Please specify in which thematic area this should be addressed, max 100 words.)

30. Do you have any other comments regarding Social Sciences (Max 100 words)

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Innovation

While research is urgently needed to provide new solutions to curb AMR, the transfer from research to innovation remains particularly challenging. In addition to the classical barriers to innovation (networking, Intellectual property issues, funding valley, lack of understanding of the market and route to translation from academic researchers…), the transfer to innovation faces additional challenges in AMR research, such as the low return in investment in developing cost of antimicrobials, which is a barrier to industry investment. The candidate partnership One Health AMR aims to address the innovation priorities in each of the thematic areas.

31. Do you consider that anything essential is missing regarding Innovation aspects in the document? (Please specify in which thematic area this should be addressed, Max 100 words)

32. Do you have any other comments regarding Innovation aspects? (Max 100 words)

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Globalisation

Pathogens circulate without recognising borders and limiting the circulation of pathogens, microorganisms or their genes is elusive. For this reason, the fight against AMR should be coordinated worldwide. In this context, WHO has developed a global research agenda for antimicrobial resistance in the Human Health sector. In addition, WHO, FAO, WOAH, and UNEP joined their efforts to develop a One Health Priority Research Agenda for Antimicrobial Resistance. The identification of Research and Innovation objectives for the One Health AMR Partnership was done in alignment with these organisations in order to ensure synergy and complementarity. In this context, a specific attention has been paid to cover the priorities of both High-Income Countries (HIC) as well as Low- and Middle- Income Countries (LMICS).

33. Do you consider that anything essential is missing regarding Globalisation aspects in the document? (Please specify in which thematic area this should be addressed, max 100 words.)

34. Do you have any other comments regarding Globalisation aspects? (Max 100 words)

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Survey Part 4: General Feedback

35. Please provide any other comment or feedback related to the research and innovation objectives (Max 30 words)

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