

Summary of EU-JAMRAI achievements as of October 2020 *Handing over the beginning rather than the end*

An ambitious and challenging EU-funded project

The efficiency of any action addressing Antimicrobial Resistance (AMR) and Healthcare-Associated Infections (HCAI) relies on involving different groups and on understanding the context of each of these, with a One Health approach. This means that the rationale underpinning the international action on AMR has to be “Think global, Act local”.

Supported by the Health Programme of the Health and Food Safety Directorate-General, EU-JAMRAI is the unique place gathering all key actors in the fight against AMR, 26 Member States, organisations such as ECDC, OECD and WHO and 40 stakeholders (representatives of the civil society, health professionals, patient associations, actors from the animal and environmental sectors and companies) involved in the field. After three years of coordinated work, EU-JAMRAI is ready to propose concrete steps to enable European countries to strengthen the implementation of efficient and evidence-based measures to tackle AMR and HCAI.

Concrete results to scale up¹

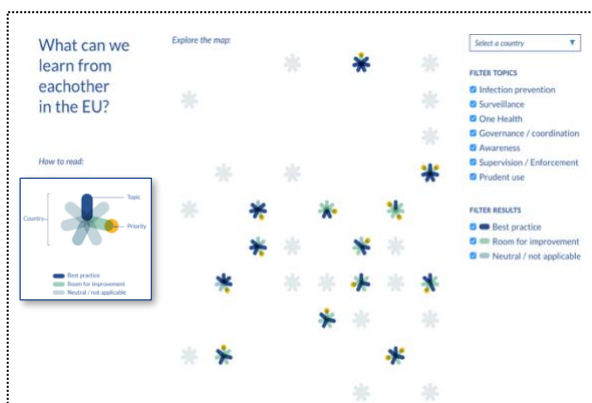
Partners involved in the Joint Action achievements’ cover the key areas to address AMR and HCAI.

Strengthening national and European response against AMR

During the first 18 months of the EU-JAMRAI, participating countries completed several activities aiming at strengthening national response against AMR: Member States self-assessed the implementation of their National Action Plans (NAPs) and conducted a SWOT analysis, 3 pilot country-to-country visits were organized and during a workshop countries discussed about ways of supervision, inspection and enforcement of national response against AMR.

One Health country visits as driver to work on AMR within the European Union

Building up on the results and experiences of the self-assessments, the SWOT analysis and the pilot country-to-country visits, the methodology for the country-to-country assessments was revised and updated, and a document describing the minimal requirements for the visits was developed.



Country-to-country visits interactive tool

Using the revised methodology, expert teams of thirteen EU Member States visited their peers in other EU countries to evaluate their **NAPs** and **One Health strategies**, exchange best practices and discuss about future policy options. These country visits have demonstrated to be an effective cooperative working method that enables the identification of highly relevant topics to discuss at European level. The main conclusions of these country-to-country visits have been summarized on an interactive microsite² that visualizes who visited who and provides an overview of best practices for each of the following AMR topics:

¹ All results and documents are available at <https://eu-jamrai.eu/results/>

² Available at <https://eu-jamrai.eu/strengthening-national-response-country-to-country-visits/>

infection prevention and control, surveillance, One Health, governance/coordination, awareness, supervision, budget/political commitment and antimicrobial stewardship.

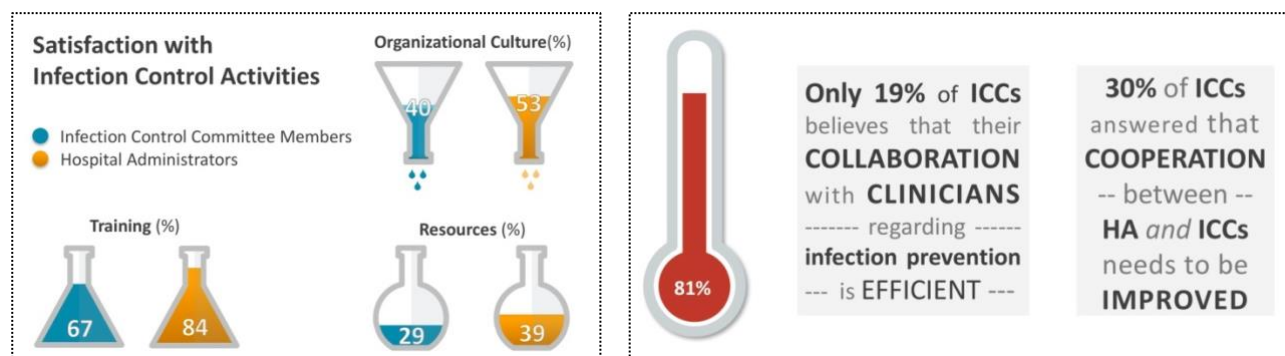
Strengthening control and supervision through a voluntary EU network

A voluntary **EU network of bodies and institutions** responsible for the evaluation, control and supervision of AMR, infection prevention and control, antimicrobial stewardship and healthcare related activities is being created. A series of interviews with the authorities responsible to evaluate these activities in different MS were conducted in order to gather insights and information on the needs and wishes, which can be used for the creation of the voluntary EU network. The aim of the network is to facilitate collaboration, discuss common problems, exchange views and best practices. The results of this activity will be presented and discussed with MS during an upcoming meeting of the AMR One Health Network and other relevant EU fora.

Testing programmes to prevent Healthcare-Associated Infections (HCAIs)

Gap identification on Infection Prevention and Control Programmes (IPCs)

In the field of HCAIs, two surveys were developed. Both surveys had large participation (> 2,500 respondents) and results depict not only the necessary institutional structures and resources needed for effective IPC implementation, but also the limiting barriers to be overcome as well as the behavioural changes needed. The survey highlighted that many gaps still remain. Some of them are lack of active involvement of hospital administrators and clinical department heads, insufficient cooperation between hospital administrators, IPC teams and public health authorities and lack of human and budgetary resources³.



Implementation of Universal Infection Control Framework (UICF)

22 healthcare settings from 5 countries (Austria, Greece, Italy, Portugal and Spain) are participating in the implementation of the Universal Infection Control Framework (UICF). The objectives of UICF are firstly to raise awareness on AMR and HCAIs and the consequences of these public health threats on patient safety. Secondly, to make IPC implementation more effective highlighting essential activities, clarifying roles and evidencing its cost effectiveness. And finally, to train on basic infection control principles and on the use of mechanisms such as audits to promote behavioural change, gap assessment and other communication and collaboration activities.

After completing a gap assessment, all participants selected the domains and the UICF activities identified as priorities for their healthcare settings and received the training tools that should be

³ *Gaps between policy and Infection Control in clinical practice & Gaps between organization culture and patient safety*: EU-JAMRAI; 2018. Available at <https://eu-jamrai.eu/testing-programmes-to-prevent-hcais-top-down-approach/>

used by all the infection control hierarchy: hospital administrators, clinical supervisors, healthcare workers and infection control committees.

The initial proposal of UICF is available in EU-JAMRAI website⁴. After evaluating its implementation in these 22 healthcare settings, the framework will be updated, published and shared with all EU Member States.

Implementation of guidelines for prevention of Catheter Associated Urinary Tract Infection (CAUTI)

Using the evidence-based Breakthrough Series Model for Improvement, 30 pilot wards in eight EU Member States (Belgium, Czech Republic, Estonia, Latvia, Lithuania, Netherlands, Slovenia and Sweden) and three non-EU countries in Europe (Georgia, Moldova and Ukraine) implemented guidelines for CAUTI prevention⁵. The design of the implementation process was quality improvement work with a bottom up approach.

A survey was performed in the hospital wards as a baseline to identify areas in need of improvement with regard to CAUTI prevention. The experiences of using the implementation model were positive and facilitating factors were management support and motivated staff with an active role in decision making and prioritizing changes. Some of the barriers reported with regard to the implementation work were cultural aspects and lack of resources.

As a result of the improvement work several pilot wards reported decreased use of urinary catheters. Other examples of achievements were increased compliance to standard precautions, procurement of closed collection systems and development of national guidelines on CAUTI prevention.

Beyond EU-JAMRAI and as result of the project participating countries reported achievements such as national plan to reduce HCAs being developed, development of IPC strategy, implementation of guidelines for CAUTI prevention in regional/local hospitals and continuous use of the implementation model in other wards and hospitals.

Increasing prudent use of antibiotics (antibiotic stewardship)

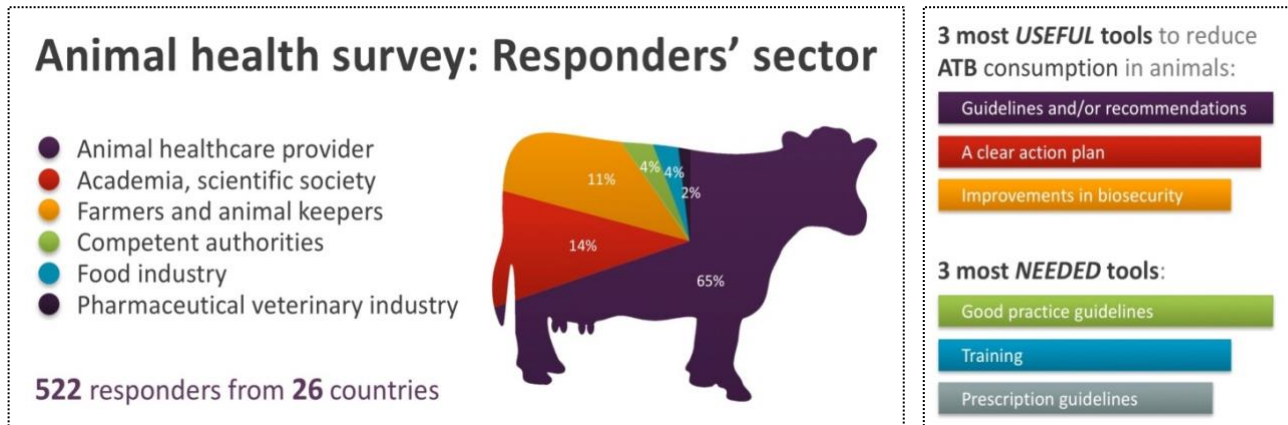
After setting up and collecting the results of a survey for clinicians in primary care, long term care facilities and hospitals, the Joint Action published a repository with guidelines, tools and implementation methods for antibiotic stewardship for human health⁶.



⁴ Initial proposal of the Universal Infection Control Framework (UICF). EU-JAMRAI; 2019. Available at <https://eu-jamrai.eu/testing-programmes-to-prevent-hcais-top-down-approach/>

⁵ Introducing and working with an implementation model for CAUTI prevention: EU country teams' experience & Non-EU country teams' experience; 2020. Available at <https://eu-jamrai.eu/testing-programmes-to-prevent-hcais-bottom-up-approach/>

⁶ Guidelines, tools and implementation methods for antibiotic stewardship. EU-JAMRAI; 2018. Available at <https://eu-jamrai.eu/increasing-prudent-use-of-antibiotics-human-health/>



A qualitative study on attitudes towards core elements of antimicrobial stewardship programs was conducted also in seven countries (Sweden, Italy, Austria, Germany, Spain, Slovenia and Norway). It focused on the identification of success stories and barriers to stewardship implementation at different levels of healthcare, by exploring in depth the experiences of implementation by professionals at national, hospital, long-term care and primary care level.

In animal health, the level of implementation and acceptance of stewardship programs has been assessed through a survey⁷. The aim of this activity was to identify the core components needed for implementation that can be used by Member States when planning their own stewardship programs.

Improving surveillance

In animal health, the EU-JAMRAI consortium, in collaboration with the main stakeholders in the field, set up the framework for a **European Antimicrobial Resistance Surveillance network in Veterinary medicine (EARS-Vet)** to fill the current surveillance gap of bacterial pathogens resistance data in diseased animals in Europe, aiming at integration with EARS-Net and the EFSA monitoring. With EARS-Vet, Europe would move towards a much stronger One Health surveillance strategy of AMR.

In human health, a pilot study has been finalized to proof the concept of a real-time surveillance on antibiotic use and antimicrobial resistance. Once the results will be analysed, it will show the barriers that partners have faced and the benefits of such a surveillance approach.

Prioritizing and implementing research and innovation

Identifying research gaps and fostering convergence on most pressing needs of national and international research agendas

EU-JAMRAI performed a mapping of European research priorities with the help of seven voluntary countries⁸. Results highlight current European priorities and critical gaps.

All participating countries consider that fundamental research on AMR (bacterial mechanisms involved, causes/consequences etc.) and on strengthening surveillance are priorities. Six out of seven define as priority the assessment of best practices and strategies for antibiotic stewardship,

⁷ *Useful guidelines and tools to improve the prudent use of antimicrobials in animal health*. EU-JAMRAI; 2019. Available at <https://eu-jamrai.eu/increasing-prudent-use-of-antibiotics-animal-health/>

⁸ *National research priorities from seven countries and gap identification*. EU-JAMRAI; 2019. Available at: <https://eu-jamrai.eu/research-and-innovation-gaps/>

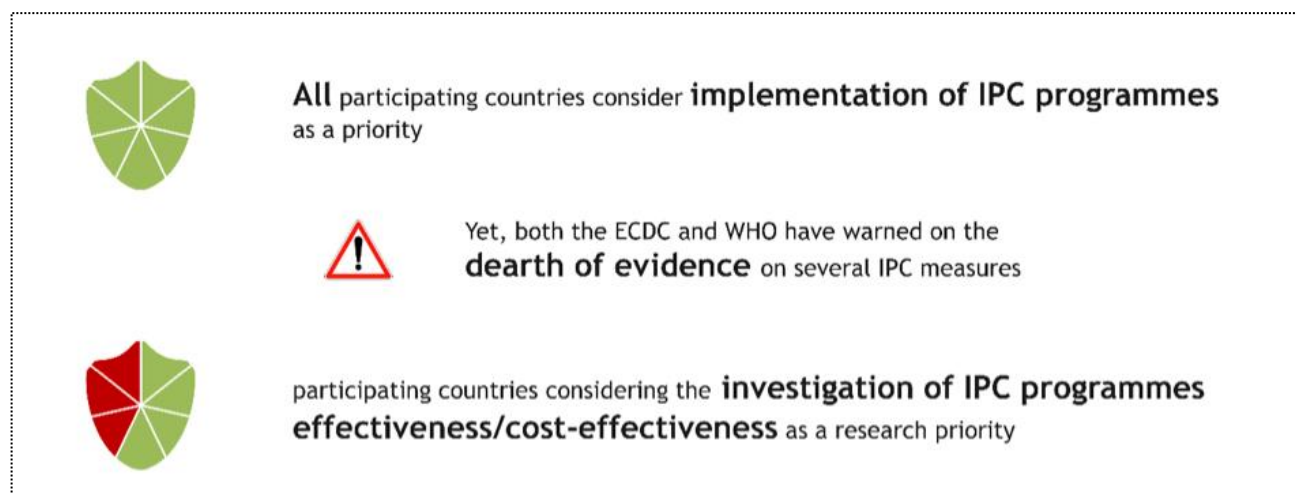


and five out of seven consider that the development of antibiotics, alternatives to antibiotics or diagnostics is also a pressing matter.

The identified gaps include a lack of research in the environmental field, in clinical trials efficiency and in the food safety area.



While not being as alarming as the gaps mentioned above, the EU-JAMRAI results are also of great concern for the lack of research in the field of infection prevention and control (IPC) as emphasized in the figure below.



Results of the mapping exercise were compared with the existing multi-country strategic research agendas to identify opportunities for additional research priorities addressing the identified gaps. Critical research gaps highlighted in our mapping exercise were fairly covered in multi-country strategic research agendas. On the contrary, IPC was only partially covered.

The EU-JAMRAI has therefore developed a list of IPC research priorities covering gaps in the field. This list was built from literature review and was validated by two groups of experts. The EU-JAMRAI list of IPC research priorities has been published on the EU-JAMRAI website⁹, and in an international journal¹⁰. The EU-JAMRAI consortium also elaborated a policy brief to aware policy makers about the need to fill-in the gaps in IPC research.

⁹ *Research priorities identified as gaps*. EU-JAMRAI; 2020. Available at: <https://eu-jamrai.eu/research-and-innovation-gaps/>

¹⁰ <https://doi.org/10.1186/s13756-020-00801-x>

Exploring and detailing European strategies to incentivize public and private research and innovation on new antibiotics, alternatives, diagnostics, and strategies to combat AMR and HCAI

The EU-JAMRAI detailed several opportunities/incentives to finance pull incentives for antibiotic innovation in Europe in an article published in a peer-review journal¹¹. Then ten country visits were performed to better understand countries' willingness and challenges to invest in the different incentives (related to new and old antibiotics, veterinary vaccines, and IPC measures). Preliminary conclusions from these visits include:



- Currently the most pressing concern for European countries is not the lack of new antibiotics but unstable supply of existing antibiotics. Shortages are increasingly common. They result in suboptimal treatment and the reported expanded use of broad spectrum antibiotics, thereby accelerating resistance. The EU-JAMRAI has recently submitted a paper in a peer-reviewed journal on how supply chain transparency could enable sustainable and continuous supply of essential medicines (under revision).
- At the same time, European countries recognize the need of new antibiotics. However, there is general uncertainty of the added value of recently approved antibiotics, since the clinical trials were small and concluded non-inferior status only. Countries would like to see new antibiotics demonstrating clinical superiority against resistant pathogens, even through small trials.
- Most European countries prefer a pan-European pull incentive, rather than setting up their own national solutions. The main objective of this pull incentive would be to secure sustainable access to important antibiotics across Europe, ideally for both old and new antibiotics.
- Yet this pan-European pull incentive must be independent from actual unit pricing and reimbursement processes that are the jurisdiction of individual countries.
- It is appealing that large pharmaceutical companies contribute financially to any pull incentive since other therapies, like cancer treatment, are dependent upon effective antibiotics.

EU-JAMRAI has also been actively involved in high-level meetings to discuss the implementation of a pan-European pull incentive mechanism. The EU-JAMRAI notably collaborated with the EMA, EIB, WHO Europe, UNICEF, Global AMR R&D Hub, GAP ONE, UK team administering its pull incentive, and more.

Finally, EU-JAMRAI has actively communicated on opportunities for incentives through various presentation to a wide range of stakeholders (DIA virtual, CeBIL in Cambridge, Global AMR R&D Hub in Geneva, GARDP in Stockholm, and more).

Raising awareness on AMR and promoting behaviour change

After delivering the document 'A Social Behaviour Change Communication strategy to tackle AMR and reduce HCAs in Europe'¹², EU-JAMRAI started implementing many awareness raising activities.

¹¹ *Financing Pull Mechanisms for Antibiotic-Related Innovation: Opportunities for Europe*. Christine Årdal, Yohann Lacotte, Marie-Cécile Ploy on behalf of the EU-JAMRAI; February 2020. Available at : <https://doi.org/10.1093/cid/ciaa153>

¹² A SBCC strategy to tackle AMR and reduce HCAs in Europe. EU-JAMRAI; 2018. Available at: <https://eu-jamrai.eu/raising-awareness-on-amr-strategies-and-reports/>



Micro-Combat App



The most noteworthy are: (i) the online video campaign #Don'tLeaveltHalfway that reached **2.7 million** people in one month; (ii) the organization of a webinar for journalists with clear and accurate scientific information from senior scientists/experts with long experience in the fight against AMR; (iii) the development in **18 languages of the online game app Micro-Combat** designed to teach young audiences the different kinds of pathogens, the multiple routes of transmission, the specificity of drugs to combat them, and the phenomenon of antimicrobial resistance; (iv) and the organization of a **contest to find the first global symbol that represents the global threat of antibiotic resistance**. The winning symbol, selected by a multidisciplinary jury that involved most of our stakeholders, will be announced in November 2020. The **contest** generated a lot of discussion in social media reaching almost 700.000 people and got **600 applications from 44 countries**.

This high participation is considered a success of the initiative; moreover, EU-JAMRAI's objective went beyond finding the best Antibiotic Resistance Symbol, indeed the contest was also a vehicle to raise awareness about this big challenge.

The impact of all these activities has been reported¹³ and EU-JAMRAI experience and lessons learnt will be collected on a 'Technical guide for countries on communication and awareness raising activities'.

Giving visibility to what EU is doing to support Member States

Up to date, **EU-JAMRAI progress and results have been presented at almost 60 AMR relevant events** such as ministerial AMR conferences, different editions of the European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), the European Health Forum in Gastein and the EU Health Programme High Level Conference. Academic posters, abstracts and peer reviewed articles have been accepted in several health congresses and published in recognized science journals such as those of the Oxford University Press, Eurosurveillance and the last two editions of AMR Control magazine.

Results have also been disseminated through EU-JAMRAI website and quarterly newsletters sent to 700 subscribers. From the beginning, EU-JAMRAI outcomes have been promoted on line thanks to a dynamic social media strategy matched with the production of original contents, like infographics and video interviews to EU-JAMRAI partners and keyspoke persons¹⁴.

¹³ All activities reports available in the section "Raising awareness on AMR" of EU-JAMRAI results webpage: <https://eu-jamrai.eu/results/>

¹⁴ EU-JAMRAI Dissemination Report. Available from: <https://eu-jamrai.eu/visibility-dissemination>



A project connected to the reality in the field

The efficiency of any action addressing AMR and HCAI relies on involving policy-makers of different sectors and other relevant stakeholders and on understanding the different contexts. From the very beginning EU-JAMRAI has counted on the support and guidance of an Advisory Board of representatives of competent authorities of the different Member States. At the same time, the involvement of the Stakeholder Forum in monitoring and evaluation efforts has been key to assess EU-JAMRAI activities and ensure that the Joint Action is strategically connected to the global challenges and developments in the AMR field.