



Policy brief:

Appropriate use of antibiotics in a One Health perspective

A holistic approach including targeted implementation strategies and time-appropriate surveillance in human and animal health

Background

Antimicrobial resistance (AMR) poses a serious challenge; in the European Union (EU) alone it is estimated that AMR costs approximately EUR 1.5 billion annually in healthcare costs and productivity losses. Three of the most important areas with the highest added value for action are promoting the prudent use of antimicrobials, enhancing cross-sectorial work, and surveillance of AMR and antimicrobial consumption.

Antimicrobial stewardship is defined as “a coherent set of actions which promote using antimicrobials responsibly”¹ and is one of the core strategies to combat AMR. European guidelines for the prudent use of antimicrobials in both human and animal health^{2,3} were developed with the purpose of providing practical guidance on the development and implementation of strategies to promote appropriate use of antimicrobials. European countries vary in their focus and level of implementation of antimicrobial stewardship actions.

Better surveillance is part of the key objectives of the [European One Health Action Plan against AMR](#) with the aim of making the EU a best practice region. Surveillance of AMR and antimicrobial consumption (AMC) is paramount in monitoring progress of AMR National Action Plans (NAPs), and specifically of antimicrobial stewardship programmes. A One Health AMR surveillance system is essential to understand the magnitude of the problem, identify trends, determine how AMC and AMR are linked, evaluate policies and set priorities. Although in the EU gaps in surveillance remain and one of these gaps is a Europe-wide surveillance system for AMR in sick animals.

What EU-JAMRAI adds to the situation

Antimicrobial stewardship in human medicine

- The EU-JAMRAI identified a lack of efficient and easily accessible tools to facilitate the implementation of antimicrobial stewardship at both country and healthcare level.
- Existing guidelines, tools and implementation methods stratified by level-of-care (hospital, long-term care facility (LTCF) and community setting) were identified and reviewed and a [repository](#) was made. This repository has been well received and already used, among others, by the ARCH Network⁴.
- Results from a one-day workshop with participants from 22 different European countries, showed that hospitals currently have more actions in place than community settings. Whilst there has been a lot of recent action for family doctors, experience with long-term care facilities (LTCF) is lagging behind. Although there were different success factors and problems specific to individual countries, there was also a lot of common ground (e.g. good leadership and clear lines of accountability and well-functioning IT) which meant countries could benefit directly from findings in other member states.
- A qualitative study was conducted in seven different European countries to assess attitudes towards core elements of antimicrobial stewardship at national, hospital, LTCF and primary care levels, focusing on success stories and barriers to stewardship implementation. The results are already being used to inform the content and action points of upcoming NAPs.

¹ Dyar OJ, Huttner B, Schouten J, Pulcini C; ESGAP (ESCMID Study Group for Antimicrobial stewardship). What is antimicrobial stewardship? Clin Microbiol Infect. 2017;23(11):793-798. doi:10.1016/j.cmi.2017.08.026

² European Centre for Disease Prevention and Control. Proposals for EU guidelines on the prudent use of antimicrobials in humans. Stockholm: ECDC; 2017.

³ Commission Notice – Guidelines for the prudent use of antimicrobials in veterinary medicine OJ C 299, 11.9.2015, p. 7-2

⁴ Aim to bridge the gap between human and animal surveillance data, antibiotic policy, and stewardship



Antimicrobial stewardship in veterinary medicine

- To assess the level of implementation and acceptance of antimicrobial stewardship programmes (ASP), an electronic questionnaire was disseminated through partners and stakeholders of the EU-JAMRAI.
- Core components needed for implementation were identified which can be used by member states when planning their own stewardship programmes. In animals this is broader than in humans, due to the variety of production systems and animal species.
- The results of the questionnaire are already being used to propose a stewardship program suitable for adaptation and use in both companion and production animal, structured around different strategic and specific actions.
- When developing an ASP, it is important to define objectives, identify all actors that need to be involved, and periodically assess the progress and success, in order to constantly improve and address the need to review the strategy.

Surveillance of AMR and antimicrobial consumption in human health

- In order to shorten the current time gap between AMR and AMC data collection and assessment, a near-real time surveillance system has been piloted within the EU-JAMRAI, during a 2.5 year period, collecting 41 indicators each trimester: 19 AMC indicators for hospital care (HC); 10 AMC indicators for primary care (PC); 7 AMR indicators for HC; and 5 AMR indicators for PC.
- Twenty partners from 10 countries enrolled the study, reinforcing their surveillance systems by providing data on a quarterly basis, from hospitals and/or primary care at a local, regional or national scope. This approach would complement the current surveillance on AMR and AMC data in the EU/EEA Member States, which are informed to the ECDC and assessed on a yearly basis.
- In addition to the innovative quarterly based surveillance, this pilot system introduced new indicators to increase the knowledge of AMR and AMC status from healthcare centres level up to the regional or national level, allowing each healthcare centre to monitor their own AMR and AMC data evolution over time, in order to carry out local, regional or national interventions on a more timely manner:
 - A new AMC indicator for hospitals to monitor consumption in DDD per 1000 bed-days, complementing the current EU/EEA AMC surveillance data for HC that are expressed as DDD per 1000 inhabitants
 - A new AMR indicator to monitor the incidence density of resistant isolates from all clinical samples per 1000 bed-days in hospitals and per 1000 inhabitants in primary care, complementing the current EU/EEA AMR surveillance data that are expressed as resistance percentage from invasive (blood and cerebrospinal fluid) isolates

Surveillance of AMR in animals

- AMR surveillance efforts in the animal sector in Europe produce useful data on the possible spread of AMR to humans through the food chain, but they are of little help to inform antimicrobial treatment guidelines and support antimicrobial stewardship in the veterinary sector.
- As part of the EU-JAMRAI, a broad consultation of experts from 14 countries and from European stakeholder organizations (incl. ECDC, EFSA, EMA, EURL-AR and FVE) led to the conclusion that time had come to build 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.
- National AMR experts were consulted during 12 country visits about their expectations from EARS-Vet and under which conditions they would be ready to participate. Of note, 11 countries already have a national surveillance system in place. These were described and analysed to define, *via* a pragmatic bottom-up approach, the EARS-Vet objectives, scope (i.e. AMR hazards of interest) and standards (i.e. microbiological techniques and interpretation criteria).
- 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.



Call for action

Antimicrobial stewardship in humans

- We encourage Member States to use the repository and the reports as tools for improvement and more successful implementation of antimicrobial stewardship at different levels of human healthcare, which will be an added value to the implementation of the national and EU action plans.
- The EU should prioritize further efforts on antimicrobial stewardship by developing European core elements for antibiotic stewardship programmes at national level, as well as all levels of healthcare. The qualitative evaluation conducted in EU-JAMRAI can contribute with valuable information about the most appropriate core elements of antimicrobial stewardship programmes and the most significant enablers and barriers for successful implementation.

Antimicrobial stewardship in veterinary medicine

- We encourage Member States for further consensus procedure involving the key stakeholders in animal health to be able to publish 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.

Surveillance of AMR and antimicrobial consumption in human health

- We encourage policymakers to consider improving AMR and AMC surveillance in the EU by supporting real-time or near-real-time surveillance systems in addition to the existing surveillance systems.

Surveillance of AMR in animals

- We encourage policymakers to build on Member States strong interest in monitoring AMR in diseased animals at a European level, with a number of countries already having national surveillance in place.
- The EU regulation 2016/429 (Animal Health Law) opens for the possibility to regulate AMR surveillance in diseased animals in Europe; EFSA was requested to provide, by March 2022, “a scientific opinion for the listing and categorisation of transmissible animal diseases caused by bacteria resistant to antimicrobials”.
- EU-JAMRAI built a preliminary network of 13 countries and set the technical basis for EARS-Vet (scope, objectives, standards). The next step will consist in launching a pilot phase where participating countries start sharing data and produce a first EARS-Vet report, thereby delivering a proof-of-concept for a European AMR surveillance in diseased animals.
- We strongly encourage European decision-makers to consider EARS-Vet as a possible resource for future implementation if, AMR surveillance in diseased animals becomes mandatory in Europe.