An overview of JPIAMR SRIA priority topics and research and innovation objectives

Priority topic	Research and innovation objectives
Therapeutics	
Discovery of new antibiotics and therapeutic alternatives, and the improvement of current antibiotics and treatment regimens	• Find new antibiotics and targets • Develop new chemical entities and scaffolds • Improve pharmacokinetics and pharmacodynamics of antibiotics, including neglected antibiotics • Use personalised medicine and artificial intelligence to improve therapies • Develop alternatives for antibiotics • Develop treatment protocols based on combination therapy using existing and new antibiotics • Develop policy measures and economic stimuli to minimise barriers for the development, availability and introduction of new therapies and alternatives Assess how regulation modifies and influences production and use of antibiotics
Diagnostics	
Development and improvement of diagnostics to improve the use of antibiotics and alternatives to antibiotics	• Improve the efficacy of new and existing diagnostic tools to more effectively distinguish between bacterial and non-bacterial infections, and/or detect antibiotic susceptibility • Create support for the implementation of innovative technologies and linkage to data platforms promoting the use of narrow-spectrum antibiotics • Improve the use of rapid diagnostics in appropriate One Health settings • Improve understanding and explore ways to overcome behavioural and socio-economic barriers limiting the adoption and use of rapid diagnostics
Surveillance	
Optimisation of surveillance systems to understand the drivers and burden of antimicrobial resistance in a One Health perspective	• Improve and standardise AMR surveillance systems, from sampling to data analysis including sampling frame, tools, methodology and reporting • Strengthen the use of surveillance data to identify human and non-human reservoirs of AMR • Optimise the use of surveillance data to estimate burden and to assess the impact of interventions • Develop novel techniques to supplement and promote the exchange of surveillance data • Improve and standardise the surveillance of antibiotic use

Priority topic	**Research and innovation objectives**
Transmission	
Understanding and preventing the transmission of antimicrobial resistance	• Unravel the complex dynamics of selection and transmission of antimicrobial resistance • Identify factors responsible for the persistence and spread of resistant organisms and resistance elements • Determine the impact on AMR of different systems of healthcare, animal production, global trade and environmental pollution and contamination
Environment	
The role of the environment in the selection and spread of antimicrobial resistance	• Determine and model the contribution of contamination sources, environmental reservoirs and exposure routes on the emergence and spread of AMR • Evaluate the relationship between AMR and the environment, climate change, and pollution • Assess the potential impact of industrial systems on AMR in the environment • Develop innovative technological, policy, social, economic and regulatory approaches to mitigate AMR in the environment
Interventions	
Investigation and improvement of infection prevention and control measures in One Health settings	• Develop innovative interventions aimed to prevent and control the spread of AMR in a One Health perspective • Investigate the effectiveness of AMR prevention and control strategies to increase uptake and acceptance in One Health settings • Assess the effectiveness and cost-effectiveness of specific AMR prevention and control practices, considering different geographic and socio-economic settings • Optimise implementation strategies, including drivers for and barriers to behavioural change, to reduce AMR • Understand the prescription behaviours contributing to the responsible and prudent use of antimicrobials • Assess educational and training programmes to enhance antibiotic stewardship