

Supplementary Material

Opportunities and challenges in antimicrobial resistance policy including animal production systems and humans across stakeholders in Argentina: a context and qualitative analysis

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I. Timeline containing the legislation and policies in place within the AMR spectrum in Argentina

[1916] Creation of the formerly called Instituto Nacional de Microbiología “Malbran”, which is renamed in 1996 (see below).

[1956] Creation of the National Agricultural Technology Institute (INTA)

[1964] Act. 19 of the National Law of Medications No. 16,463. It states that "any form of advertising of products whose sale has not been authorized by prescription is prohibited" (subsection d).

[1967] National law regulating pharmaceutical activity. Also, the Directorate of Registration Inspection and Border Health of the Ministry of Health of the Nation, which upon verifying the violations of the regulations must initiate the corresponding summary actions and may conclude with the sanctions established in art. 45 of Law 17565 on the Exercise of Pharmacy Activity: warning, fine, closure of the establishment, suspension of registration and/or disqualification.

[1969] Decree number 3835/1969 of the Ministry of Public Health established that medicines with antibiotic activity for systemic use must be dispensed under a prescription filed by the dispenser, with penalties for non-compliance with: warning, fine, closure, suspension of registration, disqualification and /or prison of up to three years (Laws 17565/[1967](#) of Practice of Pharmacy and 26524/2009 of the Penal Code)

[1970] Decree number 3835/69 (later modified by decree number 378/70) of the then Ministry of Social Welfare. It established that medicines whose active pharmaceutical ingredients (IFAs) have antibiotic activity for systemic use must be dispensed according to their registration condition of January 1, 1970. Prescriptions must be archived by correlative date and kept for a period of two years, after which the pharmacy can delete them.

[1983] Creation of the National program of epidemiology and control of hospital-acquired infections, which was implemented and monitored by the National Institute of Epidemiology (INE), decree number 2885/83.

[1986] Creation of the National Antimicrobial Resistance Surveillance Network WHONET-Argentina

[1992] Creation of the National Administration of Medicines, Food and Medical Technology (ANMAT)

[1995] Creation of the Intensified National Epidemiological Surveillance System for Hospital Infections (SIVENIH), implemented on a pilot basis and involving 25 public and private hospitals in the country.

[1996] Creation of the National Administration of Laboratories and Institutes of Health (ANLIS), decree number 1628.

[1998] Creation of the National Service of Agri-food Health and Quality (SENASA)

[2001] Creation of the Argentine Beef Promotion Institute (IPCVA), law number 25,507.

[2004] Creation of the National Hospital Infection Surveillance Program (VIHDA) to monitor hospital-acquired infections in participating hospitals.

[2007] Decree number 609 states that antimicrobials must be sold only under prescription.

[2009] Law 26,524. The dispensation of any type of medicinal product without compliance with the legal conditions of sale would be considered as a crime, which can be punished with prison for up to three years.

[2011] Decree number 666/2011 determined that any establishments having food-producing animals must keep a record book for the administration of veterinary products, subject to inspections.

[2011] Decree number 666 determined that the food-producing establishments must keep a record book of treatments subject to inspection by SENASA in which all administration of veterinary products on production animals must be recorded.

[2011] Act. 36 of Decree 7123/68, regulating Law 17,565, defined that: “The acquisition and sales provided by drugstores must be made by invoice and/or separate remittance..., keeping the Documentation filed in an orderly manner, making it available to the inspectors of the Secretary of State for Public Health, at their request.

[2011-2013] ANMAT drug traceability programs (decree number 435, National Ministry of Health) and SENASA phytosanitary and veterinary products (SENASA, decree number 369/2013), will provide data on the commercialization and distribution of antimicrobials in humans and in food-producing animals and agriculture.

[2013] Decree number 369/2013 created the Traceability System for Phytosanitary and Veterinary Products.

[2013] SENASA instituted the National Phytosanitary and Veterinary Products Traceability System, which reports the volume and type of antimicrobials being marketed within the veterinary products framework for commercialization. This online system involves all the parts from the commercial chain; including the manufacturer or importer of the product to the veterinarian who indicates and sells it. In this way, every time a sale is made, the seller must declare what he sold, and the buyer who accepted the sale and who assumes responsibility for the possession of the products purchased.

[2015] Decree number 834/2015 y 391/2015. Creation of the National Action plan for the surveillance, prevention and control of antimicrobial resistance (June) in line with the creation of the national commission for the control of antimicrobial resistance (CoNaCRA).

[2015] Decree number 591. Creation of the National Plan for the surveillance of AMR in food-producing animals (November)

[2015] Decree number 594/2015 prohibited the inclusion of antimicrobials in animal feed. This latest regulation points to the total prohibition (in 2019) of the use of antimicrobials as promoters of animal growth.

[2015] The National Administration of Medicines, Food and Medical Technology (ANMAT) states that the pharmaceutical labelling of antimicrobials must agree with the usual doses and treatments duration (decree number 7,130).

[2019] SENASA states that the manufacture, distribution, import, use and possession of veterinary products containing colistin is banned from veterinary products/medicine (Decree reference: EE 54429573/2018).

[2022] Antimicrobial resistance prevention and control law (number 27680). National statement on establishing the appropriate mechanisms to promote and control antimicrobial resistance in the country. It is remarked as a problem of national interest that perpetuates overtime.

Additional sources

Chapters 6.7 to 6.10 of the WOA (World Organisation for Animal Health) Terrestrial Animal Health Code, which range from the harmonization of national AMR surveillance programmes to methodologies for monitoring the quantities of antimicrobials used and their patterns of use, the criteria for their prudent and responsible use, and the methodology for applying risk analysis derived from the use of antimicrobials in animals throughout the food chain.

For more details on distribution and marketing of drugs in Argentina, see [https://uk.practicallaw.thomsonreuters.com/w-014-7135?transitionType=Default&contextData=\(sc.Default\)&firstPage=true](https://uk.practicallaw.thomsonreuters.com/w-014-7135?transitionType=Default&contextData=(sc.Default)&firstPage=true)

II. Summary of the Argentinian National Action Plan to combat AMR

General overview

The national action plan was elaborated and designed by the Ministry of Health in 2015 (16) in partnership with the following organisations:

- The National Administration of Laboratories and Health Institutes (ANLIS)
- National Administration of Medicines, Food and Medical Technology (ANMAT) and the REMEDIAR Program
- Ministry of Agriculture, Livestock and Fisheries:
 - National Service of Agri-food Health and Quality (SENASA)
 - National Institute of Agricultural Technology (INTA)
- National Universities of La Plata and the Centre of the Province of Buenos Aires
- Representation for the Americas of the World Organization for Animal Health (WOAH)
- Argentinean Society of Infectious Diseases (SADI)
- Argentinean Society of Intensive Care (SATI)

The three main objectives of the national strategy (action plan) are:

- a) To prevent the emergence and spread of resistant bacteria through the regulation and supervision of antimicrobial sales, the promotion of their responsible use, and the prevention and control of healthcare-associated infections.
- b) To strengthen AMR surveillance and antimicrobial usage policies.
- c) To promote innovation, non-antibiotic growth promoters, and diagnostic tests to identify resistant bacteria.

These three main objectives comprise 10 different tasks detailed in the figure below.

Figure SM1. Main tasks of the Argentinian National Action Plan against AMR and their respective subobjectives.

Main 10 tasks to combat AMR in Argentina	Specific actions/sub-objectives
1. Promote leadership for the prevention and control of AMR	To develop and conduct a strategy for the prevention and control of AMR with experts' participation. To fund strategies' activity to enhance participation/awareness.
2. Surveillance of AMR in human and animal health	To develop a national surveillance network coordinated by reference laboratories for human health, animal health and agri-food production.
3. Monitor antimicrobial consumption	To develop a system for monitoring sales, access and appropriate and adequate use of antimicrobials.
4. Regulate and supervise antimicrobials usage and sales	To establish prescription sales requirements and monitor its effective compliance. To regulate the number of antimicrobial units in the pharmaceutical industry. To prohibit the use of antimicrobials as growth promoters in food production.
5. Promote responsible use of antimicrobials	To develop guidelines for diagnosis and treatment of most prevalent infections. To train health professionals on the appropriate and adequate use of antimicrobials and healthcare-associated infection prevention and control measures.
6. Promote community participation	To disseminate the problem AMR might cause in the population and the establishment of education programs on the adequate use of antimicrobials
7. Implementation of antimicrobial usage control mechanisms	To implement antimicrobial management programs in health services
8. Strengthen healthcare-associated infections prevention and control programs	To develop a surveillance strategy for healthcare-associated infections.

	To implement prevention and control programs for healthcare-associated infections in healthcare services
9. Promote antimicrobial research as well as diagnostic methods	To establish the problem of AMR as a priority matter that should be financed and researched. To prioritise the evaluation of new antimicrobials and explore new diagnostic methods.
10. Monitoring and evaluating the achievement of the objectives stated in the national action plan	To create a professional commission to monitor and evaluate the implementation and execution of the strategy (National Action Plan)

Overview of the animal and agri-food related sections

AMR SURVEILLANCE IN ANIMAL AND AGRIFOOD PRODUCTION [ANIMAL HEALTH SECTION of the national action plan]

Current situation of the AMR surveillance in animal health and agri-food production

Surveillance is necessary for 3 groups of bacteria which have been primarily found in cattle, pigs, and birds: a) “indicator” bacteria, b) zoonotic bacteria, and c) pathogenic bacteria. Indicator bacteria are part of the intestinal microbiota of humans, other mammals, birds, and insects, and their importance lies in their ability to acquire and spread resistance genes that can be transferred to pathogenic or zoonotic bacteria.

Strategic lines of the national action plan for the surveillance of AMR in animal health and agri-food production

- a) Development and implementation of the national AMR surveillance program in food-producing animals to determine the presence of resistance to different antimicrobials in at least 2 commensal bacteria: *Escherichia coli* and *Enterococcus spp*, and 2 zoonotic bacteria: *Campylobacter spp* and *Salmonella spp*
- b) Harmonization of AMR surveillance strategies in human and animal health
- c) Development of communication tools and timely dissemination of information

Specific actions of the national action plan for surveillance of AMR in animal health and agri-food production

- a) To isolate commensal and zoonotic bacteria from cattle, pigs and poultry intended for human consumption, and determine their susceptibility profile to different antimicrobials
- b) To compare the results with data obtained from previous studies, when possible
- c) To determine the prevalence of AMR by animal species and by geographic region
- d) To correlate antimicrobial consumption with AMR
- e) To characterize and correlate resistance mechanisms between bacteria obtained from animal and human samples
- f) To carry out studies on the presence of antimicrobials in different sources (including water, food, etc.) and the impact of their use on the environment and production systems
- g) To evaluate alternative therapies for the use of antibiotics as growth factor in intensive production
- h) To evaluate the impact of antimicrobial administration in sources on the level of resistance observed in the environmental bacterial population.

Specifically, the National Directorate of Agrochemicals, Veterinary Products and Food of SENASA will be responsible for:

- a) Carrying out an annual monitoring of the volume of sales of antibiotics, with the collaboration of professional associations
- b) Providing data from the veterinary product traceability system as soon as it is fully operational

REGULATION OF ANTIMICROBIAL CONSUMPTION IN ANIMAL HEALTH AND AGRIFOOD PRODUCTION [ANIMAL HEALTH SECTION of the national action plan]

For more than ten years, SENASA has carried out a Program for the Control of Residuals, Contaminants and Food Hygiene of animal origin. This program seeks to detect the presence of chemical residues and contaminants in foods of animal origin that may affect the health of consumers. Among the residues under control, we find various antimicrobial agents, which can generate antimicrobial resistance when they are present in food.

Strategic lines for the regulation of the use of antimicrobials in animal health and agri-food production

- a) Development and updating of regulations on the use of antimicrobials, aimed at preserving bacterial susceptibility as a non-renewable resource
- b) To participate in international seminars on regulatory practices to improve animal health

Specific actions to regulate the use of antimicrobials in animal health and agri-food production

- a) To compile and analyse the results of the surveillance and traceability systems for veterinary products to carry out risk analyses and therefore create risk profiles
- b) To strengthen control protocols on the indiscriminate sales and usage of antibiotics
- c) To ensure that all commercialization of antibiotics be carried out by a licensed professional
- d) To create a forum for discussion on the use of antimicrobials with the chambers of the veterinary products industry, professional associations, universities and the Ministry of Health

RESPONSIBLE USE OF ANTIMICROBIALS IN ANIMAL HEALTH AND AGRIFOOD PRODUCTION [ANIMAL HEALTH SECTION of the national action plan]**Objectives:**

- a) To ensure the rational use of antimicrobial agents in animals, with a view to optimizing their efficacy and safety
- b) To comply with the ethical obligation and the economic need to keep the animals in good health
- c) To prevent or reduce the transfer of resistant microorganisms or resistance determinants within animal populations, their environment and between animals and humans
- d) To contribute to maintaining the efficacy and usefulness of antimicrobial agents used in human and veterinary medicine
- e) To protect consumer health by ensuring the safety of foods of animal origin in relation to residues of antimicrobial agents

The measures include actions at the level of all stages and actors involved in the antimicrobial usage cycle, from their registration in SENASA to their prescription, marketing and consumption. The regulations generated by SENASA in recent years, have incorporated product traceability and treatment records, which are also in line with the WOA Code.

Strategic lines for the responsible use of antimicrobials in animal health and agri-food production

- a) Development of knowledge, training and information for veterinary professionals on the prudent and responsible use of antibiotics, based on pharmacokinetic, pharmacodynamic and toxicological bases
- b) Intensification of marketing controls for antimicrobials usage and dispensing
- c) To regulate the use of antimicrobials based on the information obtained from the surveillance program, and the corresponding risk analysis
- d) To increase pharmacological knowledge about the behaviour of antibiotic considering its impact on the environment
- e) To control the evolution of antibiotic resistance bacteria in clinics of small animals and intensive productions
- f) To promote the responsible use of antimicrobials, including their correct prescription and administration by veterinarians

Specific actions for the responsible use of antimicrobials in animal health and food production

- a) To prepare a good-practice guide for the prescription and use of antimicrobials and other veterinary products, and in line with international guidelines
- b) To organise training courses and workshops for free practice veterinarians and those who work in the marketing chain or are in charge of livestock farms and balanced feed production plants, in conjunction with universities, professional associations and technical groups of exchange of the different productive activities (pigs, poultry, cattle, etc.)
- c) To incorporate AMR in the curriculum of veterinary careers, in joint work with the National Council of Veterinary Sciences
- d) To sustain and strengthen control in all stages of the distribution process and use of antimicrobials

PREVENTION AND CONTROL OF INFECTIONS IN ANIMAL HEALTH AND AGRIFOOD PRODUCTION [ANIMAL HEALTH SECTION of the national action plan]

There are current international standards highlighting antimicrobials usage, including the Chapters 6.7 to 6.10 of the WOAH Terrestrial Animal Health Code.

Strategic lines for the prevention and control of infections in animal health

- a) To develop programs for the management, prevention and control of infectious diseases associated with AMR in veterinary medicine, considering the biosafety of intensive production establishments in terms of infrastructure and adequate equipment for infection prevention and control practices
- b) To train technical personnel assigned to intensive animal production for the prevention and control of infectious diseases in production environments; and
- c) Implementation of a network of laboratories for the identification of AMR microorganisms

Specific actions for the prevention and control of infections in animal health

- a) To develop regulations to enhance infection prevention and control between the Ministry of Agriculture, Livestock and Fisheries, the Ministry of Health, universities and professional associations
- b) To carry out training courses for veterinary professionals. Courses would be delivered by the Ministry of Agriculture, Livestock and Fisheries, the Ministry of Health, professional associations and universities
- c) To promote biosafety, hygiene and disinfection of personnel, equipment and productive environment compliance.
- d) To generate new laboratories equipped with diagnosis tools to determine the levels of AMR bacteria isolated from food animals and the emergence of resistance mechanisms to critical antimicrobials in human and animal health, as well as the proper use of antimicrobials
- e) Develop a monitoring and evaluation program to adopt joint strategies between the veterinary and human areas

Also, SENASA, with the cooperation of ANLIS, INTA, and veterinary schools of national universities, implemented a parallel surveillance program for AMR in food-producing animals. The main objective of the plan is to determine and monitor the prevalence of AMR among food-producing animals to avoid the emergence and dissemination and to minimise the damage to the population and animal health (20). The program was designed in partnership with the following institutions: National Directorate of Agrochemicals, Veterinary Products and Food, National Directorate of Food Safety and Quality, National Directorate of Animal Health, General Directorate of Laboratories and Technical Control, and the General Coordination of Regional Management.

III. Consent form for interviewees (participants)

Please initial box

1. I confirm that I have read and understood the Participant Information Sheet for the above study.
2. I have been given the opportunity to consider the information provided, ask questions and have had these questions answered to my satisfaction.
3. I understand that my participation is voluntary and that I can ask to withdraw before or during the interview without giving a reason and without my medical care or legal rights being affected. After the interview has been conducted and/or after data analyses, data will be anonymised and it will not be possible to withdraw.
4. I understand that my anonymised data will be stored for a minimum of 5 years and may be used in future ethically approved research.
5. I consent to this interview being recorded for the purpose of transcription after which the recording will be deleted.
6. I agree to take part in this interview.

Name of person giving consent

Date

Signature

Name of person taking consent

Date

Signature

IV. Participant information sheet

You are being invited to take part in an interview on:

Agricultural antimicrobial supply chains and implementation of Antimicrobial Resistance National Action Plans in Argentina and the United Kingdom

Prof Lisa Boden, Prof Dominic Moran, Dr Emma Pitchforth, Dr Stephen Mackenzie, and Alejandro Petroni at the University of Edinburgh, University of Exeter and Argentinian National Administration of Laboratories and Health Institutes are facilitating these interviews/focus groups. Before you decide to take part, it is important you understand why we are conducting this interview and what it will involve. Please take time to read the following information carefully.

WHAT IS THE PURPOSE OF THIS INTERVIEW?

This interview is intended to gather information about the current communication and interfacing between policy makers, scientific experts and stakeholders in agricultural Antimicrobial resistance and National Action Plan. Our long-term goal is to build relevant expertise to be able to design robust interventions and advice to improve antimicrobial resistance and national action plan implementation outcomes in the policy.

WHY HAVE I BEEN INVITED TO TAKE PART?

You are invited to participate in this study because you have been working on or exposed to agricultural antimicrobial resistance decision-making issues in policy, either in the United Kingdom or Argentina.

DO I HAVE TO TAKE PART?

No – it is entirely up to you whether you choose to take part. If you do decide to take part, please keep this Information Sheet and complete the Informed Consent Form to show that you understand your rights in relation to the meeting and that you are happy to participate. You may withdraw from an interview at any time and without giving a reason.

WHAT WILL HAPPEN IF I DECIDE TO TAKE PART?

You will be invited to participate in a series of interviews and/or focus groups around agricultural antimicrobial resistance, antimicrobial supply and antimicrobial national action plans and how they are perceived and incorporated into policy decision making spaces and processes. Your expertise will allow us to work over the next three years on developing a series of robust suggestions to improve the science policy interface around antimicrobial resistance in both the UK and Argentina.

WHAT ARE THE POSSIBLE BENEFITS OF TAKING PART?

By participating in this discussion and sharing your experiences with us, you will be helping the research team to engage and participate with local and national policy decision-makers around integration of scientific and policy-making expertise in mitigating the risks of antimicrobial resistance.

ARE THERE ANY RISKS ASSOCIATED WITH TAKING PART?

There are no significant risks associated with participation.

WHAT IF I WANT TO WITHDRAW FROM THE STUDY?

Agreeing to participate in this workshop does not oblige you to remain in the project nor have any further obligation to this project. If you no longer want to be part of the project, please inform Prof Lisa Boden [lisa.boden@ed.ac.uk]. You should note that your ideas may be used in the design and implementation of subsequent projects and interventions. You are advised to contact the research team at the earliest opportunity, preferably before the workshop should you wish to withdraw from the project.

INTERVIEWERS AND INTERVIEW'S DETAILS

The interview will be performed by either our main researchers (detailed in the first paragraph) or Kasim Allel, who is a research fellow at the University of Exeter. The interview will take place at a time and

platform (virtual meeting via Zoom/Microsoft teams or in-person meetings) agreed upon both parties and depending on availability. The interview has five different stages covering participant's current role, understanding antimicrobial-resistance among stakeholders, information channels and flows within stakeholders/departments, challenges in the implementation of the national action plan, and future considerations. The interview has an approximate duration of 30-60 minutes per interview.

DATA PROTECTION AND CONFIDENTIALITY

Any data collected will be processed in accordance with Data Protection Law and GDPR. All information collected about you will be kept strictly confidential. Unless they are anonymised in our records, your data will be referred to by a unique participant number rather than by name. Your data will only be viewed by the researcher/research team. Data might be classified by organisation/affiliation only if participants concur. All electronic data and transcripts will be stored on a password-protected computer file within Microsoft teams' shared folders. All paper records will be held in a locked filing cabinet. Your consent information will be kept separately from your responses to minimise risks.

WHAT WILL HAPPEN WITH THE RESULTS OF THIS STUDY?

The outcomes of this meeting may also be summarised in reports and presentations to the funding agency or key stakeholders. The meeting may be video and audio recorded for the purpose of transcription. Quotes or key findings will always be made anonymous in any formal outputs unless we have your prior and explicit written permission to attribute them to you by name. Information may also be kept for future research.

WHO CAN I CONTACT?

If you have any further questions about the project, please contact Prof. Lisa Boden, lisa.boden@ed.ac.uk

If you wish to make a complaint about the project, please contact:

Lisa Boden (lisa.boden@ed.ac.uk). In your communication, please provide the study title and detail the nature of your complaint.

For general information about how we use your data go to:

<https://www.ed.ac.uk/records-management/privacy-notice-research>

V. Participant interview topic guide

You are being invited to take part in an interview on:

Agricultural antimicrobial supply chains and implementation of Antimicrobial Resistance National Action Plans in Argentina and the United Kingdom

[Please note this is a topic guide to support the semi-structured interviews. We do not envisage asking every question to every participant, but the questions are illustrative of what we hope to talk about]

Introduction

Thank you for agreeing to take part in this interview.

Can I check that you have had a chance to read the study information sheet?

Do you have any questions about the study?

[if not returned prior to interview go through and complete consent form]

Are you happy for me to begin the interview and to start recording?

[turn on recorder]

Thank you.

The interview is designed to be free-flowing so please talk about anything that you feel is relevant, I have just prepared some questions structured into five broad areas.

Interview's questionnaire

BOX 1. Survey's main sections: objectives and questions

I. Participant's current role. These questions will seek to understand what experiences our participants have and how they might be relevant to implementing the National Action Plan to combat AMR.

<1> What your job/role is, and what tasks do you and your organisation mainly perform?

<2> What are your (or department/organisation) interests and responsibilities concerning AMR?

II. Understanding AMR among stakeholders. This group of questions aim to understand employees' and organisations' views on AMR; its main drivers, change overtime, support venues, and priority areas within organisations to help tackle AMR.

<1> How do you feel (or what are your personal and department's concerns) about antimicrobial resistance in humans? Does that differ from antimicrobial-resistance in animals or any other source, including the environment (how)?

<2> Do you think the view about antimicrobial-resistance has changed over the years? How?

<3> What are the priority areas within your organisation to increase AMR awareness and to comply with the national action plan? Do you feel your organisation help contribute to any of the areas detailed in the national plan (how, which)?

<4> What are the cornerstones for increasing AMR awareness while complying with the national action plan within your organisation?

<5> Which cornerstones do you feel are most relevant within your department (organisation)? Why?

III. Information channels and flow within stakeholders/departments. These questions attempt to improve organisations decision making towards better AMR surveillance by identifying how the information is channelled within and between organisations.

<1> how do you feel about AMR-related information and communication flow within your organisation and among all stakeholders?

<2> What do you think about communicational interactions, networking, and educational or getting-to-know instances between your organisation and other stakeholders and within departments of your organisation? Would you believe (and how) that the information pathways vary between specific organisation's fields/disciplines, public/private institutions, or certain other groups?

<3> Could you identify which organisms (organisations), and how, are involved in your organisation's decision making and strategy towards improving AMR surveillance and control?

IV. Challenges in the implementation of the national action plan. These questions attempt to answer what factors or challenges might be key to increasing AMR awareness and improving AMR surveillance among food-producing animals and agriculture.

<1> Do you feel there is any challenge that your organisation faces in complying with the AMR national action plan and helping contribute to better animal surveillance? (Political priorities, monetary and non-monetary resources, communication, etc) What are the most important and what can be done to overcome these challenges if your organisation could prioritise resources to contribute higher to AMR surveillance in animals?

<2> Who else do you think has a critical role in helping with AMR surveillance in animals from the pool of stakeholders?

V. Future and other considerations. These questions aim to understand future steps to be taken within the industry and different key members to tackle AMR

<1> How organisations might be helped to enhance cross-communication and teamwork? How can we ensure organisations make progress and collaborate meeting NAP's criteria?

<2> Which organisations, at the national and international levels, do you think are most important to talk to and direct the efforts to address the gap in knowledge in AMR? Does the list differ for improving the NAP?

<3> Is there anything else important that you might want to share with us or that we are missing in the current interview?

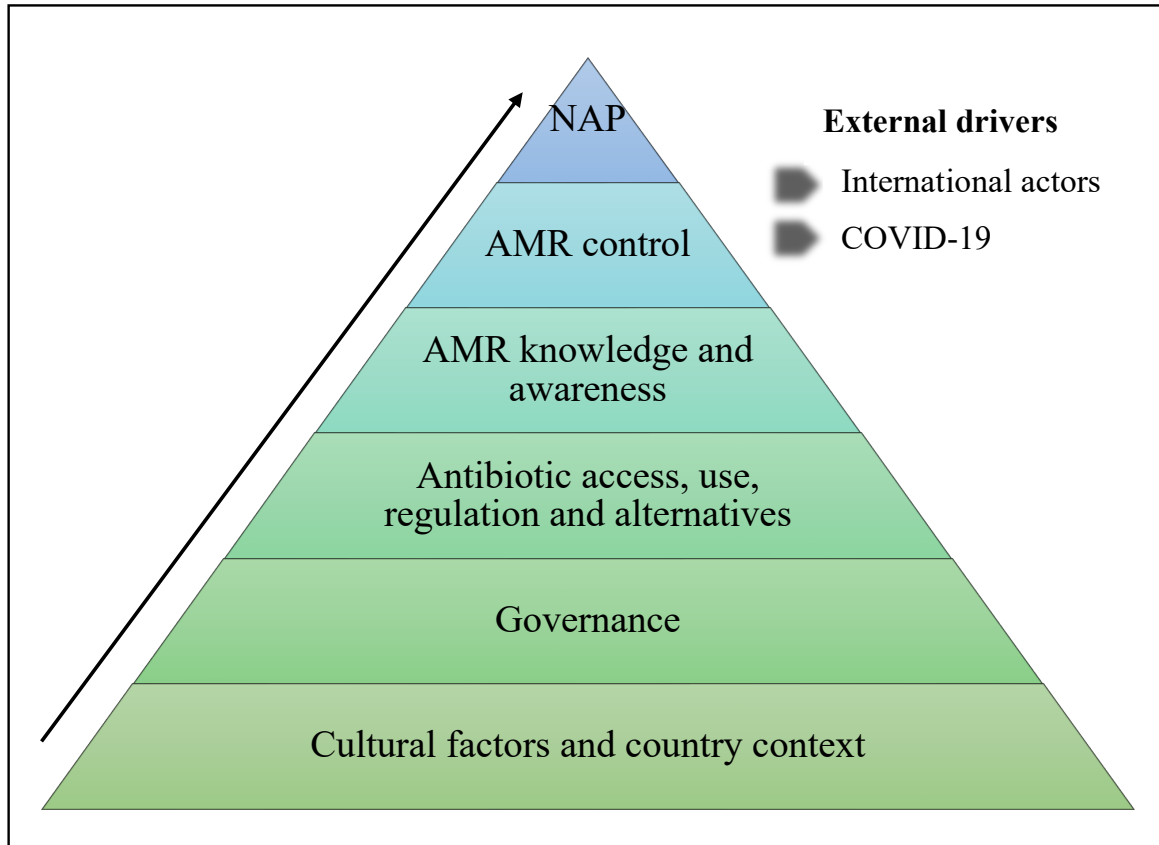
VI. Description of main preliminary topic codes applied to the interview analyses and their respective definitions

Table SM1. Topic codes and their definitions

Code	Definition
Application of NAP	Implementation of NAP and roles, including views on progress
AMR control	Perceived progress and challenges, inclusive of surveillance
Antibiotic access, use and regulation (human and animal)	Referring to antibiotic consumption and access and prescriptions in animals and humans
Alternatives to antibiotics	Discussion of alternatives to antibiotics
Context of Covid	Referring to acceleration of AMR, potential opportunities and good practice, ways of working
Governance	Government priorities, federalisation, vertical vs horizontal, nature of institutions/groups, accountability (lack of)
AMR knowledge/awareness	Referring to public and professional awareness – the challenge of awareness and steps taken to address
Resources	Referring to human and economic/budgetary resource (lack of) available to tackle AMR
Stakeholders	Describing/listing stakeholders involved
Stakeholder communication	Communication (lack of) between stakeholders
Cultural and country context	Understanding of importance of cultural, country context, including personal relationships
International actors and policies	Mention of international actors and role in/influence on national AMR in Argentina
Food production	Reference to food production markets, differences by animal species
Information/data flow	All references, specifically to information/data e.g. capacity/system to share data
Regulation and compliance	Description of different regulation, proposed change and perceived (potential) impact
Political context and agenda //	Importance of (changing) political will
Vet sector	Including role of vet sector, antibiotic in animals
Training and learning opportunities	Including seminars, conferences, courses, stewardship programs, etc.

VII. Themes ordered from broader to greater specificity.

Figure SM2. Structure of the ordered themes



Notes: AMR= Antimicrobial resistance. NAP= National action plan.

VIII. Packed code cloud for identified themes/sub-themes

Figure SM3. Code cloud for identified themes and sub-themes



Notes: AMR= Antimicrobial resistance.