



Food and Agriculture
Organization of the
United Nations



World Health
Organization

CALL FOR DATA ON FOODBORNE ANTIMICROBIAL RESISTANCE

Deadline: 31 December 2017

Background

In recognition of the growing problem of antimicrobial resistance (AMR) and its increasing threat to human health and the consensus that addressing this problem requires a One Health approach, the 39th session of the Codex Alimentarius Commission (CAC) agreed it was important for the food safety community to play its part and re-established the *ad hoc* Codex Task Force on AMR. One of the objectives of the task force is to revise the current Codex Code of Practice to Minimise and Contain Antimicrobial Resistance ([CAC/RCP 61-2005](#))¹. In order to ensure that this revision is based on the most recent evidence and scientific analysis regarding foodborne AMR, that the scope appropriately reflects the role of the food and agriculture sector in minimizing the risk to public health from the development and spread of foodborne antimicrobial resistance and that a range of risk management options are available for consideration by Codex, Codex issued a request for scientific advice to FAO and WHO in collaboration with OIE². Furthermore, Codex requested that the scientific advice should seek to identify any further issues and specific gaps in current scientific knowledge that need to be considered in the revision of existing Codex texts and/or development of new Codex texts.

In order to address this request, Codex proposed that FAO and WHO in collaboration with OIE undertake a review of current and new data relevant to the development and transmission of foodborne antimicrobial resistance through the food chain with the following objectives:

- identifying all potential sources/contributors and practices related to the development and/or transmission of foodborne AMR, including scientific information on important factors influencing foodborne AMR, taking into consideration animals, crops, environment, and also manure, biocides, waste and packaging, production systems and practices (including animal husbandry of nomadic herds and ethno-veterinary use of plants), food processing, retail handling and consumption;
- providing information on examples of risk profiling and risk ranking and risk assessment for specific AMR organisms and/or determinants and their pathways, where available; and
- Identifying and evaluating risk management measures at different points in the food chain to address foodborne AMR and provide advice accordingly on the efficacy of such risk management options in achieving risk based public health outcomes.

In addition, Codex highlighted the challenge faced by the food and agriculture sector to change practices as well as meet the global food needs, and requested advice the impact on foodborne AMR as a result of current practices involving the administration of antimicrobials and the identification and evaluation of risk management options that do not involve administration of antimicrobials for example, alternatives to antimicrobials which would support behaviour change and encourage the implementation of practices aimed at addressing foodborne AMR.

¹ Available at: http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCAC%2BRCP%2B61-2005%252FCXP_061e.pdf

² See Appendix 3 in the report of the codex physical working group on AMR. Available at: http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fmeetings%252FCX-701-40%252FWD%252Fcac40_12_Add2e.pdf

FAO and WHO, together with OIE have been working on AMR and an overview of some of the current and ongoing activities are available online³. However, in order to complement existing work and ensure that the organizations can respond as comprehensively as possible to this new request for scientific advice, a series of expert consultations to address both the risk assessment and risk management dimensions of the request are being planned. The purpose of this call is to identify as much relevant data as possible from as many countries as possible to support the development of background papers and the expert consultations themselves. Emphasis will be put on those areas where there has been limited work to date.

Objectives

The data will serve as inputs to the development of scientific advice which will guide the elaboration of appropriate Codex texts.

Request for relevant information

FAO and WHO want to ensure that all available and relevant information/data are collected, and are requesting governments, the food industry, academia, consumer groups, laboratories, health care providers and any other interested organizations and individuals to submit any available data on the specific areas indicated. These data may be published or unpublished. Reference should be made to related published studies, where applicable.

Deadline for submission of data

Please submit any relevant information by 31 December 2017 in any format (electronic and/or hard copies - electronic submissions are preferred, either via e-mail (if not too large) or on CD ROM), in any official United Nations (UN) language (English, French, Spanish, Arabic, Chinese, Russian), and with a title and short description of the content in English along with the list of data and information requirements if possible, to Antimicrobial-Resistance@fao.org and amrfos@who.int. If information is not available in an official UN languages, a short summary of the nature of the data should be provided, preferably in English.

CALL FOR DATA

a) Development and transmission of foodborne antimicrobial resistance through the food chain

Data on antimicrobial use in crop/plant systems

Data on the link between the use of antimicrobials on crops and foodborne AMR was highlighted as a priority area for scientific advice by the CAC. Hence, we are particularly interested in receiving data on antimicrobial use (AMU) in horticulture systems in particular in relation to the following:

- Are any of the following products used in your country or region to enhance plant health, treat or prevent plant diseases, or reduce post-harvest losses:
 - Copper-containing compounds
 - Oxytetracycline
 - Streptomycin
 - Oxalinic Acid
 - Kaguamycin
 - Colistin
 - Triazole fungicides
 - Penicillins
 - Please list other specific agents used for control of bacterial and fungal infections of plants
 - How these products regulated and what are the registration requirements?

³ Available at: http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FMeetings%252FCX-701-40%252FWD%252Fcac40_14Add1e.pdf

- What seeds/crops/commodities are most frequently treated with these agents? Please include information on seed coatings.
- How frequently are the products applied? *E.g.* several times during the growing season? Only at harvest? To fields during the fallow period? Constantly in irrigation water? Other?
- What is the dose most commonly used and what is the mode of application? Are any of the products applied as long acting or slow release formulations?
- Is the sale of these products for horticultural use documented? By whom? Is it available??
- What additional information do you know that is available about antimicrobial pesticide use in horticulture?
- Are you aware of any studies on the development of resistance among phytopathogens or foodborne pathogens associated with use of an antimicrobial pesticide? Are these published or can you share the outcomes?
- Are there any surveillance programmes in place regarding resistance in phytopathogenes or foodborne bacterial pathogens to pesticides or to periodically assess their efficacy to pathogens?
- Are there specific practices implemented to address the issue of resistance development? Are these widely implemented? Are they reviewed periodically?

Data on antimicrobial use and antimicrobial resistance in animal production systems

While this is the area which has probably been most extensively studied, much of the existing data tends to come from terrestrial animal production systems and high income countries. In this context we are particularly interested in receiving data on AMR and AMU in aquatic production systems and in data from low and middle income countries for all animal production systems.

Aquatic production systems

- What, if any, medically important antimicrobials⁴ are used your country or region to enhance aquatic animal health, treat or prevent diseases, or reduce losses and how are these regulated?
- Which species are most frequently treated with these agents?
- How frequently are the products used? And on what basis (indication of infection/illness, preventive measure etc.)
- What is the most commonly used mode of administration (water, feed, gavage, injection, topical)?
- Is the sale of these products for aquaculture use documented? By whom? Is it available??
- What additional information do you know that is available about antimicrobial use in aquaculture?
- Are you aware of any studies on the development of resistance in foodborne pathogens associated with use of antimicrobials in aquaculture? Are these published or can you share the outcomes?
- Are there any surveillance programmes in place regarding resistance to antimicrobials used in aquaculture or to periodically assess pathogen sensitivity; are data from these programmes available??
- Are there specific practices implemented to address the issue of resistance development? Are these widely implemented? Are they reviewed periodically?
- Are there specific practices implemented to reduce the need for antimicrobials? Can you provide details?

Terrestrial animal production systems

- What, if any, medically important antimicrobials⁵ are used your country or region to enhance terrestrial animal health, treat or prevent diseases, or reduce losses and how are these regulated?

⁴ The 5th edition of the WHO Critically important antimicrobials list which also list all medically important antimicrobials for human health is available at http://www.who.int/foodsafety/areas_work/antimicrobial-resistance/cia/en/

⁵ The 5th edition of the WHO Critically important antimicrobials list which also list all medically important antimicrobials for human health is available at http://www.who.int/foodsafety/areas_work/antimicrobial-resistance/cia/en/

- Which species are most frequently treated with these agents?
- How frequently are the products used? And on what basis (indication of infection/illness, preventive measure *etc.*)?
- What is the most commonly used mode of administration (individual (e.g. injection, group e.g. via feed)?)
- Is the sale of these products for terrestrial animal use documented? By whom? Is it available?
- What additional information do you know that is available about antimicrobial use in aquaculture?
- Are there any surveillance programmes in place regarding resistance to antimicrobials used in terrestrial food producing animals or to periodically assess pathogen sensitivity; are data from these programmes available??
- Are there specific practices implemented to address the issue of resistance development? Are these widely implemented? Are they reviewed periodically?
- Are there specific practices implemented to reduce the need for antimicrobials? Can you provide details?

Data on antimicrobial resistance in the production and food processing systems

Data on AMR in the environment, in particular food production environments is of interest to understand the potential for contamination of food with AMR pathogens or determinants that may persist on food to the point of consumption. In particular information on the following is requested:

- Any information on AMR organism/pathogens in manure and or other types of waste from other agriculture, production or processing environments that may contribute to the presence of AMR organisms in food production/processing environments.
- Any information on the contribution of antimicrobial residues in the environment to the development of AMR resistant organisms of concern from a food safety perspective.
- Any studies on the movement of resistance determinants through the food production/processing environment.
- Any studies on horizontal gene transfer in the food production/processing environment.
- Any information on the potential for sanitizers/biocides used in food production (from primary production onwards)/processing to contribute to resistance to medically important antimicrobials.

Data on any food processing, distribution, retail and consumer practices relevant to the development and transmission of AMR

As food processing changes with a move towards clean labels, 'healthier' formulations which often remove traditional hurdles for microbial growth, this may lead to the use of different technologies, different packaging that may influence the development of AMR organisms or potentially facilitate the dissemination of antimicrobial resistant organisms. In particular information on the following is requested:

- Information on any changes to food processing approaches, food formulations etc. that may increase or decrease the risk of dissemination of microorganisms including antimicrobial resistant organisms through the food chain.
- Use of antimicrobials in the distribution and retail chains e.g. in packaging materials, on food preparation surfaces that may contribute to the development of resistance to medically important antimicrobials.

New scientific developments related to our understanding of how AM resistance develops and may be transmitted via food

With the development and increased use of new analytical and genomic tools our understanding of the development and transmission of AMR is increasing. In this context any data/information from any new research/studies such as:

- Contributors to the current upsurge in resistance to critically important antimicrobials – more widespread use of the antimicrobials themselves only or are there other contributors such as

changes in use of other antimicrobials/chemicals leading to cross resistance *etc.*, in particular that may be relevant for foodborne AMR.

- Contribution that antimicrobial residues in food (even at very low concentrations – i.e below MICs) might eventually play in the generation of resistance.
- Contribution of antimicrobial residues, including low concentrations, in waste and/or food producing environments to development of AMR.
- Factors that contribute to the maintenance or loss of resistance in the food production or food processing environment.
- Mobile resistance elements and the potential for transfer from commensal /nonpathogenic organisms to pathogens in food production/processing environments.
- Any other information that contributes to the understanding of foodborne AMR.

Risk profiles and risk ranking and risk assessment for specific AMR organisms and/or determinants and their pathways

Any risk assessments or ranking or risk profiling exercises or studies that have been undertaken on foodborne antimicrobial resistant pathogens and their potential transmission pathways. These may have taken place at local, national or regional level.

b) Assessment of AMR risk management measures at different points in the food chain

Data on different types of animal production systems, the practices within those systems including the use of alternatives to antimicrobials

Animal production systems vary widely and to determine if risk management advice should target all production systems equally or certain production systems, data is required on a range of production systems and the practices therein to facilitate an assessment of whether particular practices present less or more risk. For example, the size of the farm or the throughput of the processing facility.

Data on alternatives to antimicrobials for use in food production systems.

In order to consider all potential options for the management of foodborne AMR, information on any of the practices and/or alternatives to antimicrobials that have been applied and studies/assessed in a particular food chain. These include actions which would support behaviour change and promote the implementation of practices aimed at addressing foodborne AMR.

Assessments on the efficacy of different practices and alternatives in achieving risk based public health outcomes.

Any assessments of the efficacy of different practices /alternatives including consideration of any undesirable or unintended consequences resulting from their use.

Confidential and/or unpublished data

FAO and WHO recognize that some of the information and relevant data which are now required may be unpublished or of a confidential nature. With regard to unpublished information and data, this remains the property of the author for subsequent publication by the owner as original material. Unpublished confidential studies that are submitted will be safeguarded in so far as it is possible to do so without compromising the work of FAO and WHO. Specific issues relating to confidentiality should be discussed directly between the information and data owners and FAO/WHO. For these and other issues please contact FAO and WHO at the contacts provided.

Correspondence

For more information, please contact Dr Sarah Cahill (FAO) or Dr Awa Aidara Kane (WHO).

Office of Food Safety
Attention: **Dr Sarah Cahill**
Food and Agriculture Organization of the
United Nations,
Viale delle Terme di Caracalla
00153 Rome, Italy
Telephone: + 39 06 5705 3614
Email: Antimicrobial-Resistance@fao.org

And Department of Food Safety and Zoonoses
Attention: **Dr Awa Aidara-Kane**
World Health Organization
20, Avenue Appia
1211 Geneva 27
Switzerland
Telephone: +41 22 791 2403
Email: amrfos@who.int