

# CODEX ALIMENTARIUS COMMISSION



Food and Agriculture  
Organization of the  
United Nations



World Health  
Organization

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Agenda Item 6

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## JOINT FAO/WHO FOOD STANDARDS PROGRAMME

### AD HOC CODEX INTERGOVERNMENTAL TASK FORCE ON ANTIMICROBIAL RESISTANCE

Eighth Session

Virtual

#### GUIDELINES ON INTEGRATED MONITORING AND SURVEILLANCE OF FOODBORNE ANTIMICROBIAL RESISTANCE (For comments at Step 3)

(Prepared by the by Chair and co-chairs of the EWG (the Netherlands, Canada, Chile, China and New Zealand) based on the comments received in reply to CL 2021/59-AMR)

*The chair and co-chairs have proposed revised text in section 8 - 8.3 based on the comments received with the aim of facilitating the discussions at TFAMR8 and finding a consensus.*

#### 8. Components of integrated monitoring and surveillance program(s) for AMR

41bis. [This section is are intended to provide an enabling framework which countries can utilize to establish integrated monitoring and surveillance of foodborne antimicrobial resistance appropriate to their national situation, and which includes considerations of available resources. As such, integrated monitoring and surveillance may vary between countries.](#)

42. Integrated monitoring and surveillance program(s) for foodborne AMR should consider the following elements:

- Sampling design.
- Sampling plans.
- Sample sources.
- Target microorganisms and resistance determinants.
- Antimicrobials to be tested.
- Laboratory testing methodologies and quality assurance systems.
- Data management activities.

Co-chairs proposal:

Retain current text.

*Available resources is covered in the new chapeau statement. Keep data management as included as component, section 8.7 (collection and reporting of resistance data).*

43. The initial scope and design of the monitoring and surveillance program(s) for AMR ~~may~~ [should](#) be informed by previous research or surveillance findings, by national priorities or by national and [/or](#) international experience and [agreed](#) recommendations. As the AMR program develops, the scope and design may be adjusted based on one or more of the following factors:

- Monitoring and surveillance findings.
- Epidemiology of antimicrobial-resistant microorganisms as available.
- Risk profile and risk assessment findings.
- [Evaluation of the integrated monitoring and surveillance program\(s\)](#)

Co-chairs proposal:

To replace “may” with “should” to provide useful guidance on what the initial scope and design of the program(s)

should be informed by. Flexibility is provided by the chapeau sentence.

Addition of “agreed” to reflect a consensus approach.

Add additional bullet as results of an evaluation are an important way to adjust the design of the program(s).

Other editorial adjustments for accuracy.

### 8.1. Sampling design

44. The design of monitoring and surveillance program(s) for AMR may build on or be integrated with existing monitoring and surveillance program(s), or may involve development of new infrastructures and activities ~~only~~ specifically for the purpose of foodborne AMR data collection. If data are collected through existing programs designed for another purpose, this will need to be specified and the ~~different~~ methodologies, data limitations and data interpretation methods should be described.

Co-chairs proposal:

To accept text modifications as proposed. The first three proposals are editorial. “Data limitations” was added as it was missing from the sentence. “methods” was deleted from the last part of the last sentence, as it is covered by “methodologies”.

45. The sSampling design should consider temporal and geographical coverage of data collection.

46. Once a sampling design is established, consistency in sample types and methodology is desirable to achieve long-term, comparability and accurate interpretation of results, especially when new methodologies are added and the program is adjusted.

### 8.2. Sampling plans

47. The sampling plan should describe the following:

- The procedure to collect a sample from the selected sample source(s) at the selected point(s) in the food chain.

Co-chairs proposal:

Retain original text.

*Member countries requested “Representative/Representativeness” to be added in the first bullet, “representativeness” was added to the second bullet point as a consideration for sample size calculations.*

- Sample size, statistical methods and underlying assumptions (e.g., representativeness, frequency of recovery, the initial or expected prevalence of AMR in that microorganism and the size of the population to be monitored) of the data used to calculate the number of samples and isolates.

Co-chairs proposal:

Add “representativeness”.

Add “size of the population to be monitored” as it provides more guidance to what needs to be included in sample size calculations and what it might apply to. Proposal included in text above.

- Statistical power, precision and goals objectives of testing.

Co-chairs proposal:

Editorial amendment for reasons of consistency. The term ‘objectives’ instead of ‘goals’, as the term ‘objectives’ is already used several times throughout the whole document.

- Strengths and Limitations that affect data interpretation.

Co-chairs proposal:

Add strengths for technical accuracy. Editorial amendment.

48. The following elements should be considered in the sampling plan:

- Whether the Ssampling strategy is may-be active (i.e., designed for AMR surveillance) or passive (i.e., using a system already in place).
- Target animal or plant/crop species, food commodities or food production environment.

- Point(s) in the food chain where the samples will be taken and sample type.
- [Selection of Strata](#) (levels) or risk clusters (groups) to best meet surveillance objectives.

Co-chairs proposal:

Editorial amendments to improve readability.

- Target microorganisms, resistance phenotypes and resistance determinants.
- Frequency of sampling.
- Prevalence and seasonality of the microorganisms under study, [if known](#).
- Standard operating procedures for sample collection:
  - Who should [be collecting](#) the samples.
  - Procedures for collection of samples in accordance with the defined sampling strategy and to guarantee that traceability, [biosecurity](#), [biosafety](#) and quality assurance are maintained from collection through to analysis and storage.
  - Procedures for storing and transporting the samples in order to maintain sample integrity [for testing](#).

Co-chairs proposal:

Accept proposals as submitted for improvement of the text.

49. Initial implementation [of the sampling plan may might](#) include a limited selection of sample sources at one or more specific points along the food chain.

50. As the program(s) develop, and implementation advances according to priorities and resources, the sample sources within the sampling plan may be broadened. This may include additional animal or plant/crop species, production types, [stages in the food chain](#) or food commodities [or stages in the food chain](#) to gradually be more representative of the populations of interest.

Co-chairs proposal:

Retain original. Accept editorial proposals as submitted.

### 8.3. Sample sources

51. When identifying the sample sources to be included in the monitoring and surveillance program(s), consideration should be given to the major direct and [scientifically relevant](#) indirect food exposure pathways.

Co-chairs proposal:

Add “scientifically relevant” to provide practical guidance on which indirect food exposure pathways.

52. The selection of samples should reflect production and consumption patterns in the population and the likely prevalence of foodborne AMR. [The prevalence of the bacterial species should be considered to maximize the likelihood of detection.](#)

Co-chairs proposal:

For accuracy, to move the second sentence from “Food production animals” bullet (below) to para 52, as it applies to all type of samples.

53. The integrated program(s) should reflect ~~the~~ food production in the country and cover samples from relevant stages of the food chain where there is science-based evidence that they could contribute to foodborne AMR. [For integration, samples should be collected from the same species at the different but relevant points along the food chain. Samples should be, to the greatest extent possible, representative of the target animals and plants/crop species and the epidemiological unit being targeted.](#) Possible sample sources are:

Co-chairs proposal:

The First and last sentence from “Food producing animals” bullet below inserted as the second and third sentence in paragraph 53, as these statements do not just apply to food producing animals.

- **Food producing animals**

~~Samples should be, to the greatest extent possible, representative of the animal species and epidemiological unit being targeted.~~

**Co-chairs proposal:**

Moved to chapeau paragraph 53 as it is not a sampling source, the statement applies to more than just food producing animals.

~~The prevalence of the bacterial species should be considered to maximize the likelihood of detection.~~

**Co-chairs proposal:**

Moved to paragraph 52.

Samples taken from healthy animals ~~destined for slaughter~~ may be collected on-farm, during lairage, or at ~~the~~ slaughter. Collection of samples from animals not immediately entering the food chain may provide additional information on foodborne AMR at the population-level but may be a lower priority than those animals directly entering the food supply.

**Co-chairs proposal:**

Deletion of “destined for slaughter” to have a general recommendation and is duplicative of the title “food producing animals”.

- At the farm-level, samples<sub>s</sub> may include faeces, feed<sup>‡</sup> ~~and/or feed ingredients~~, water, ~~litter or bedding~~ or other relevant food production inputs.

**Co-Chairs Proposal:**

For a compromise and a more general recommendation, the footnote as well as “and/or feed ingredients” were deleted. The text “litter or bedding” was moved to “Food Production Environment”.

Consideration may be given to samples described in the OIE Terrestrial Animal [Health Code](#) and Aquatic [Animal Health Codes](#), specifically the chapters on Harmonisation of National [Antimicrobial Resistance AMR Surveillance and Monitoring Programmes](#) ~~as well as on~~ [and](#) the Development and Harmonisation of National Antimicrobial Resistance Surveillance and Monitoring Programmes for Aquatic ~~a~~Animals.

- At lairage, samples<sub>s</sub> may include rectal samples or fecal samples from pen floors or crates.

**Co-chairs proposal:**

For lairage, suggest to retain as it provides useful guidance for possible samples sources and samples that fall under the language “may include”. See also para 41bis.

- At slaughter, samples<sub>s</sub> may include carcass swabs, caecal contents or lymph nodes. In some animal species, caecal contents or lymph nodes may be representative of the pre-slaughter environment and may or may not provide an estimate of AMR arising at the farm-level. Samples collected after slaughter (e.g., carcass) may provide an estimate of contamination arising from the slaughterhouse.

**Co-chairs proposal:**

Retain the original text.  
Food products is covered by the following bullet.

~~For integration, samples from food producing animals should be collected from the same animal species at the different relevant points along the food chain.~~

**Co-chairs proposal:**

To accept the proposal as provided, to move to second sentence of paragraph 53 (above). Integration of data on AMR

<sup>‡</sup>~~The location of where the feed or feed ingredient is sampled, the manufacturing plant (feed mill), production site or farm, may provide additional information for understanding foodborne AMR.~~

along the food chain requires samples from the same animal species along the food chain.

- **Food**

Food [product](#) samples may be collected at processing [plants](#), packaging [plants](#), wholesale or retail. Samples may include [both](#) domestically-produced and [when appropriate](#), imported food sources.

**Co-chairs proposal:**

Reminder that the heading is “possible sources” and within this bullet is “samples may include”. Suggest add “when appropriate” as the best compromise of comments received.

The place where the food samples are collected should reflect the production system in the country and the purchasing habits of the consumer (e.g., sampling open markets or chain stores).

At the retail-level, food samples may include raw meat, fish or seafood, dairy products, other edible tissues, raw produce, and [other](#) minimally processed animal products and produce. Food selection may be modified periodically in order to capture multiple commodities, seasonality, or where products have been identified as high risk.

**Co-chairs proposal:**

Poultry has not been added as it’s already included under raw meat.

- **Plants/crops**

The selection of plants/crops should be risk-based and/or guided by the relevant standard setting bodies where available.

**Co-chairs proposal:**

Retain the original bullet. There was a proposal to replace “available” with “required”, however, this changes the meaning of the bullet. The bullet’s original text was to indicate use of standards if they existed (i.e., where available). “Required” implies that the standard setting bodies might require certain sample types. Suggest to maintain the original language, in line with PWG discussions.

Samples may be collected from farms, pre-harvest or post-harvest.

**Co-chairs proposal:**

There was a lengthy discussion at the PWG to arrive at this highly abbreviated text. Suggest to maintain the original text here as per the discussions at PWG and to provide some minimal guidance.

- **Food production environment**

The selection of samples from the food production environment should be risk-based and relevant to the food production system.

Samples may [include be collected from](#) the [immediate](#) environment<sup>2</sup> of food producing animals and plants/crops, processing [plants](#), wholesale facilities or retail outlets<sup>3</sup>.

**Co-chairs proposal:**

There was a proposal to include “immediate” and to delete “and”.

To incorporate “immediate” and not delete “and”. The deletion changes the meaning of the original list (from the environment to sampling the plants/crops directly). “immediate” was added to be in line with the definition of “food production environment”.

Editorial change: may include has been changed to may be collected, to be in line with the language of the other bullets in this section.

*The footnote has not been deleted as it was a compromise during the PWG. Furthermore, without the footnote, there*

<sup>2</sup> [E.g., soil, water, litter and bedding, organic fertilizers, sewage or manure.](#)

<sup>3</sup> [Dust, soil, water, organic fertilizers, sewage or manure in the farm environment or in surfaces of processing areas.](#)

*is little guidance under this section of what to collect from (which is the purpose of the section).*

*See also chapeau paragraph 41bis, as regards flexibility.*