

WGS, Scientific Network for Zoonoses Monitoring Data Minutes of the 3rd meeting



14-15 October 2024

12:00-18:00 / 09:00-12:00

Minutes agreed on 30 October 2024

Location: EFSA – Parma, Board Room /Webconference

Attendees:

- Network Participants:

Country	Name
Austria	Austrian Agency for Health and Food Safety
Belgium	Federal Agency for the Safety of the Food Chain
Bulgaria	Risk assessment center on food chain
Croatia	Croatian Agency for Agriculture and Food
Cyprus	Veterinary Services
Czech Republic	State Veterinary Administration
Denmark	Technical University of Denmark
Estonia	Agriculture and Food Board National Centre for Laboratory Research and Risk Assessment
Finland	Finnish Food Authority
France	French Agency for Food, Environmental and Occupational Health & Safety
Germany	Federal Office of Consumer Protection and Food Safety German Federal Institute for Risk Assessment
Greece	National Public Health Organisation
Hungary	National Food Chain Safety Office
Iceland	The Icelandic Food and Veterinary Authority - MAST
Ireland	Department of Agriculture, Food and the Marine
Italy	IZSAM CRN GENPAT Istituto Superiore di Sanità
Latvia	Institute of Food Safety, Animal Health and Environment BIOR
Lithuania	National Food and Veterinary Risk Assessment Institute
Luxembourg	Luxembourgish Veterinary and Food Administration
Malta	Ministry for Agriculture, Fisheries and Animal Rights
Netherlands	The Netherlands Food and Consumer Product Safety Authority
Norway	Norwegian Veterinary Institute: Jannice Schau Slettemeås Camilla Sekse
Poland	National Veterinary Research Institute NIPH NIH-NRI
Portugal	Instituto Nacional de Saúde Doutor Ricardo Jorge (INSA) Autoridade de Segurança Alimentar e Económica (ASAE) Direção-Geral da Alimentação e Veterinária (DGAV)



Slovak Republic	State Veterinary and Food Administration of the Slovak Republic
Slovenia	Ministry of agriculture, forestry and food of the Republic of Slovenia, Administration for food safety, veterinary sector and plant protection. University of Ljubljana, Veterinary Faculty, National Veterinary Institute
Spain	Agencia Española de Seguridad Alimentaria y Nutrición (AESAN) Ministerio de Agricultura, Pesca, y Alimentación (MAPA)
Sweden	Swedish Veterinary Agency

- European Commission/Other EU Agencies representatives: SANTE-G5, EURL *Listeria*.
- EFSA: Anca Stoicescu; Eleonora Sarno; Elisabeth Dottolo; Mirko Rossi (Chair); Simone Baldassa; Valentina Rizzi.

1. Welcome and apologies for absence day 1

The Chair welcomed the participants. Apologies for absence were received by Romania.

2. Adoption of agenda

The agenda was adopted without changes.

3. Agreement of the minutes of the 2nd Network meeting held on 20 September 2023, in Helsinki, Finland, and online.

The minutes of the 2nd Network meeting had been previously agreed by written procedure on 06 October 2023 and published on the EFSA website on 10 October 2023.

EFSA presented the list of action points from the previous meeting including the overall response from Member States concerning the Satisfactory Survey on the WGS System launched in March 2024. The survey obtained very low response rate: responses from 8 Countries Officers and 18 Data Providers. The overall satisfaction experience was judged as moderate to very satisfactory. The experience in sharing data was evaluated as moderate to very satisfactory. The main challenges encountered were presented in the meeting and discussed together with the suggestions provided by the respondents. EFSA informed that the report with the detailed results of the survey will be made available to the Network together with the presentations given at the meeting.

For the first action point (i.e. assess how to lean the process related to interaction with Member States during the multi-country), there was no requests for changes in the procedure, based on the responses received from eight Country Officer through the survey.

Concerning the second action point (i.e. the request to inter-EURL working group on NGS to revise the bioinformatic pipeline), **Italy requested if it would be possible to engage in the work of the inter-EURL working group on NGS as Data Providers organization.**



EURL-Listeria informed that this can be discussed at the next working group meeting expected in December 2024.

4. EFSA updates on the One Health WGS system and assessment activities during 2024

EFSA presented the basic statistics on the Member States' contributions in terms of shared profiles into the WGS System (data available as of 9 October 2024). The statistics on collected profiles were displayed per pathogen, per sharing country, per sample matrix, and per place of sampling (e.g. border controls, slaughterhouses). The proportion of the profiles shared as part of joint clusters was showed. In addition, an overview of the events monitored by EFSA in 2024 was presented together with the number of the assessment reports prepared jointly with ECDC.

Furthermore, the newly implemented WGS System enhancements were shown. These included, among others, the relaxing of the QC on FASTQ quality, the improved interaction with the ECDC System, the notification and tagging flow. Demo on the notification and tagging functionalities was displayed. Finally, the new enhancements, planned for 2024 and 2025, were illustrated including the automatic transfer of all epidemiological data elements to ECDC during the assessment phase, the refactoring of the tree reconstruction linked to the query from ECDC (both changes planned to be released by the end of 2024), the automatic import of raw reads from NCBI Pathogen Detection and the new plug-in for submission of raw reads to NCBI (both changes planned to be released by March 2025).

Network members requested that the weekly notification email should include more information. Specifically, they suggested adding elements such as the sampling matrix, isolation date, and, if possible, allelic distance. EFSA will consider this suggestion for future enhancements (Action point 1).

Clarifications were provided regarding the storage of FASTQ files. It is not mandatory to store these files, as users are free to delete them from the system at any time without providing justifications. However, the NCBI plug-in will only be available for entries with FASTQ data in the EFSA database. For those entries where FASTQ files have been deleted or for those entries submitted programmatically, FASTQ files must be re-uploaded before proceeding with the submission to NCBI.

A clarification was requested on the Foodex2 catalogue and regarding the categorization of the "chicken neck skin" as non-food type while this is considered by the legislation as food type. EFSA will take this into consideration for possible revisions (Action point 2).

An additional point was raised regarding the definitions of clusters by ECDC. EFSA explained the difference between an ECDC 'core cluster' and an ECDC 'extended cluster', which are based on single-linkage clustering analysis. They also clarified the mechanisms of querying the EFSA System, which relies on pairwise distance analysis. Further clarification was provided about "missing loci", with EFSA confirming that a 10% threshold for missing loci is currently acceptable due to profiles obtained with Ion Torrent technology. Since ECDC implemented chewBBACA allele calling, the usual missing loci for Illumina data do not exceed 5%.

With regards to the minimum epidemiological metadata, EFSA presented a brief demo on the five mandatory elements, indicating the term "Country of origin of the sample", for example, is present but not part of the mandatory data element for Epidemiological data.

EFSA discussed the potential workload for countries related to sharing data, noting that while currently up to 75% of shared data matches human data, proactive sharing does not always lead to increased reactions or requests from EFSA. It has been emphasized that sharing data proactively can help identify important matches but does not necessarily result in a significant increase in workload for countries.



EFSA shared a final note with the network: during an EFSA data call, countries can always communicate directly with EFSA via email, especially when they need to report that no relevant data was found in their national databases.

5. Presentation from Portugal

The latest developments in the One Health WGS FWD surveillance system that is being built in Portugal has been presented, highlighting the recent efforts to enhance inter-sectorial cooperation, WGS typing data reporting to the National Epidemiological Surveillance System (SINAVE) and international data sharing to both ECDC and EFSA interconnecting systems. Portugal also showed INSA's experience in using the EFSA WGS system, giving positive feedback and suggestions for improvement. Following up the plans presented in the 2nd subgroup meeting in Helsinki, Portugal shares the public release of a new bioinformatics tool that aims at facilitating the local deployment of the EFSA ONE HEALTH WGS pipeline¹. Finally, Portugal presented the final results of the study "Multi-country and intersectoral assessment of cluster congruence between different bioinformatics pipelines for genomics surveillance of foodborne bacterial pathogens"², highlighting the potential impact of cgMLST schema and allele calling on cluster or outbreak case definitions in the context of multi-country outbreak investigations.

The presentation from Portugal triggered the discussion on how the case definition in Rapid Outbreak Assessments (ROA) has a strong impact in the conclusiveness of the assessment itself. EFSA explained the differences between cluster definition (which is done by ECDC with the scope to perform genomic surveillance) and case definition (which is decided by ECDC in agreement with involved countries at the beginning of the assessment). A general comment was that a more precise case definition should be defined in ROAs and that the technical issues related to difference cgMLST strategies among different countries (as presented by Portugal) should be taken into consideration. It was also mentioned that having a relaxed case definition for probable cases, and a more accurate definition for confirmed cases, which is under assessment, is a good strategy to follow.

EFSA informed that third party tools will also be available in the training materials dedicated space at the beginning of next year. There is a need to review the training material in order to include all relevant information for the users (Action point 3).

6. Presentation from Italy

An overview of the GENPAT platform developed nationally was provided, focusing on its interaction with the EFSA platform. Italy showed the decision flow between different actors in the country (i.e., Italian official labs, NRLs acting as data providers, Italian Ministry of Health). There is still the need to reach an agreement concerning the selection of the isolates that can be sent, but from an IT point of view Italy showed to be competent to support a continuous submission to EFSA system. A demo on GENPAT sharing mechanism was shown. A tool for programmatic submission was presented (EOHsender³).

Questions were raised about the programmatic submission process, specifically regarding the possibility of submitting FASTQ files programmatically to EFSA. EFSA clarified that this is currently not possible and there are no plans to allow programmatic submissions of FASTQ files.

¹ https://github.com/insapathogenomics/cml_efsawgs.onehealth_facilitator

² Mixão, V. et al. 2024; <https://doi.org/10.1101/2024.07.24.24310933>

³ <https://github.com/adipi71/EOHsender>



Regarding the programmatic sharing of cgMLST profiles, questions were raised about how EFSA can trace back to the pipeline used by the submitter. EFSA clarified that specific guidelines are available on how to perform comparability tests. EFSA encourages the network to contact the data steward for support with programmatic submissions.

7. Presentation from Sweden

Sweden showed results related on an outbreak of *Salmonella* Enteritidis in Swedish poultry production linked to a national human outbreak and how they used WGS analysis for investigating it. In Sweden *Salmonella* Enteritidis is usually rarely detected in poultry flocks, but it is found endemic in certain wild animal populations (such as hedgehog). The study showed that isolates from poultry outbreak were not matching any other isolates coming from other sources in Sweden. However, the Swedish strain was closely related (2 AD) to cases found in other EU countries (such as Belgium, The Netherlands, Luxembourg, and France) suggesting that this poultry outbreak was the result of a recent introduction from a different country. There has been a common effort between the interested countries to share data to map the sources of infection. Sweden presented a new project financed by EFSA within the new Focal Point Operational Framework Tailor-Made activities. The project aims to increase collection and sharing of epidemiological, geographical, temporal, and sequencing data in relation to similar strains of *Salmonella* Enteritidis findings. Sharing of these data is intended not only across sectors, but also across nations, to better understand the underlying population structure of *Salmonella* Enteritidis in animal reservoirs and its spread to humans. The study will aim to share data to the EFSA WGS system. This tailor-made task is coordinated by a core group from Sweden, Denmark, and Belgium. The project will start in January 2025 and end in July 2026.

8. Presentation from Denmark

Denmark presented a new project financed by EFSA within the new Focal Point Operational Framework Tailor-Made activities. The project aims to improve data sharing between EU countries and globally. The activities in the project include capacity building through sharing WGS data, bioinformatics courses, and measuring the efficacy and quality of reporting into the EFSA system. This tailor-made task is coordinated by a core group from France (ANSES), Germany (BfR), Denmark (DTU), and Italy (ISS), and all countries have been invited to participate in all activities. The project will start in January 2025 and end in December 2026.

9. Presentation from the Netherlands

The Netherlands presented the approach used in the country for an early detection of food clusters that might represent a potential cross-country outbreak, also showing the national data sharing process between Public Health and Food Safety authorities. The Netherlands presented two case studies of recurring events initially perceived as a national outbreak but found to be later having international components (one *Salmonella* and one *Listeria*). These examples underscore the critical importance of data sharing. National outbreaks can have international implications, and sharing data ensures that potential cross-border threats are identified and managed promptly. This collaborative approach enhances the effectiveness of outbreak investigations and helps prevent future incidents. The Netherlands suggested how the creation of a joint cluster in the early phases of the outbreak could effectively help the investigation.

The intervention triggered a discussion on the different action points taking place after cluster detection. Countries highlighted the importance of a weekly notification provided by EFSA based on ECDC queries.





10. Moderated discussion on the genomic surveillance and outbreak assessment

EFSA presented multi-country foodborne outbreak of *Listeria* ST173 linked to fish products⁴. The outbreak has involved multiple countries and has been prolonged, with cases reported since at least 2017. Traceability efforts did not identify a common source of contamination among the numerous different manufacturers identified in multiple countries.

EFSA used this example to initiate a discussion on the challenges of tackling an outbreak starting from a genomic cluster at the EU level. Slido (Appendix II) was utilized to gather feedback from the network. The importance of sharing metadata on a routine basis, especially before the need to assess an outbreak, was highlighted. The substantial amount of data requested by EFSA from the countries during an outbreak assessment might have been less demanding if the submission of both genomic data and metadata had been gradual along the monitoring phase.

EFSA emphasized that the interlink between data in EFSA and IRASFF is crucial for effective outbreak analysis. This includes incorporating the IRASFF number in the Program Type data element of the Epidemiological data set in the EFSA WGS system and by indicating in IRASFF the EFSA entries ID numbers, relevant for the outbreak investigation. In this regard, EFSA stressed the importance of cooperation among national actors (e.g., country officers and IRASFF contact points), particularly during outbreak assessments. The country officer is tasked with liaising with data providers and colleagues to ensure a proper follow-up, especially when products are distributed internationally.

However, countries underlined the difficulties in retrieving all traceability and epidemiological data within the short time available during outbreak assessments. Indeed, the data submitted to the EFSA system is very infrequently already present in IRASFF, as they result from sequencing isolates obtained during official control, which does not always necessitate sharing information in IRASFF (i.e., not within the scope of IRASFF notification). The actual traceability exercise starts when EFSA informs that a specific genomic profile has been found as part of an outbreak, but this requires time, which is usually lacking. It has been requested to inform Member States in advance to allow more time. However, there is the risk that in case MSs are pre-alerted in advance, in absence of an ongoing assessment, this might generate some work which would not be needed if in the end no assessment is carried out for the specific event.

11. Closure of day 1

A general summary of the topic discussed during the first day was made. EFSA planned to establish a correct method to update countries about possible clusters at risk, so that countries can promptly submit data of interest. The importance of linking Epidemiological data and WGS data submissions to IRASFF was reminded. EFSA also invited countries to interact between them as much as possible using the different platforms.

12. Welcome and Apologies for absence of day 2

The Chair welcomed the participants. Apologies for absence were received by Romania.

⁴ <https://www.efsa.europa.eu/en/supporting/pub/en-8885>



13. Legislative framework for WGS data sharing – update from European Commission

The European Commission presented the outline of the new implementing regulation voted at the Standing Committee on Plants, Animals, Food and Feed section of Biological Safety of the Food Chain meeting held on 11th of October 2024. It will be published in early 2025 and will be applicable 18 months after its publication (eventually in late 2026). The new regulation laid down in the Art 8 of Directive 2003/99/EC and has the objective to impose Member States (MSs) the whole genome sequencing (WGS) on *Salmonella enterica*, *Listeria monocytogenes*, *Escherichia coli*, *Campylobacter jejuni* and *Campylobacter coli* isolates from feed, animals, food, related environment within foodborne outbreaks and the sharing with EFSA through submission to the WGS One Health platform without delay. EC also updated the Member States about the main implications for the countries, like the need of accreditation and steady reaction to the outbreaks.

The laboratories accreditation raised the biggest discussion. The Inter-EURL working group on NGS also announced the production of a guiding document helping the countries to perform the accreditation.

14. Changes in the EFSA One Health System linked to the Legislative initiative from EC

EFSA presented the anticipated plan for enhancements of the One Health WGS system in connection with the regulation. **EFSA also informed that the network will be consulted in the initial phase to identify any needs for ensuring the correct implementation of the regulation (Action point 4).**

15. EU protocol for response to cross-border foodborne outbreak

EFSA presented the EU protocol for response to cross-border foodborne outbreak drafted together with ECDC and the results of the consultation with the network. The different steps were listed and explained. The main comments received from the network were discussed.

Specifically, the following points were raised during the discussion:

- **Use of Public Data:** EFSA clarified that public data are not used in assessments but only for hypothesis building. EFSA also explained that countries can claim ownership of public data when epidemiological data are added and associated with a specific entry in the EFSA system. Once claimed, the country can manage the data, such as by releasing or unreleasing them. EFSA also clarified that data will not be deleted from the platform after release of the allelic profiles if they are part of a cross-sectoral cluster.
- **Sequencing Technologies:** The discussion also covered sequencing platforms, the quality of their output, and the acceptance of different platforms. EFSA explained that, no technical details concerning genetical sequencing are elaborated in the protocol and, for now, all technologies will be accepted and included in the protocol. Quality checks will be discussed at the interEURL working group on NGS.
- **Access to EpiPulse by Countries:** Another discussion focused on the **accession rights of the food safety authorities to the public health platform EpiPulse and specific food-related Events and to the difficulties encountered by some countries. EFSA will discuss this topic with ECDC (Action point 5).**
- **Tagging System:** The network discussed the tagging system, emphasizing the need to establish how tagging notifications can be managed to keep countries updated



while avoiding overwhelming them with updates. **EFSA to propose info sheet on how to use tagging to help the network follow up on relevant clusters before the start of any assessments (Action point 6) and to develop use cases for a appropriate way to use tagging by the network and internally by EFSA, establish criteria for tagging (Action point 7).**

EFSA should send the protocol for final revision to the network before the joint EFSA-ECDC networks online meetin planned in spring 2025 (Action point 8).

16. Any Other Business

- The network members agreed to organise the 2025 network meeting side-by-side with the main zoonoses network meeting in Parma in 13-14 October 2025.
- EFSA will contact the network with a form for requesting the permission for publishing the names of WGS subgroup members in EFSA website.
- **Countries were invited to ensure the good communication between data provider Organizations and National Refence Laboratories (Action point 10).**

17. Conclusions

- General positive feedback was received from the network on the EFSA activities related to the WGS data collection through the EFSA One Health WGS System.
- The network highlighted the importance of the weekly report provided by EFSA based on ECDC queries and suggested improvements.
- The new tagging flow within the EFSA One Health WGS System has been considered a potential instrument for helping EFSA and the countries to simplify the communication of clusters under active monitoring, but detailed guidelines are needed to ensure the harmonized use, including specific use cases.
- The new implementing regulation was positively welcomed by the network members, although some concerns were raised about the difficulties in the accreditation process. In this regard, the inter-EURL working group on NGS and EFSA will provide support to countries with specific guidelines.
- The network agreed with the need to ensure as much as possible the interlink between the data reported in the EFSA One Health WGS system and IRASFF. **Improve communication and information flow within the country for better communication between Country Officer and RASFF contact point is needed (Action point 11).**
- The network underlined the difficulties in retrieving all traceability and epidemiological data within the short time available during outbreak assessments and encouraged EFSA to identify a possible way to pre-alert in due time on relevant clusters under assessment.
- The network provided several comments on the EU protocol for response to cross-border foodborne outbreaks, which needs to be finalized by the first semester of 2025.

18. Closure of the meeting

The chair thanked the network representatives for the intensive and productive meeting and closed the meeting at 12:00 CET.



APPENDIX I: List of Action Points

List of action points agreed at the meeting

No	Agenda Point	Action Points	Deadline
1.	4	To discuss with Inter-EURL working group on NGS the coordination with data provider organizations.	December 2024
2.	4	To revise the Foodex2 classification of "chicken neck skin" as non-food matrix.	Beginning 2025
3.	4	Review training material of the EFSA One Health WGS system and send to all users	Beginning 2025
4.	14	Send form for feedback on the changes desired by the network in view of the new regulation.	November 2024
5.	15	EFSA to discuss with ECDC about the access of food safety authorities to EpiPulse Events	Beginning 2025
6.	15	Draft an info sheet (flow chart) on how EFSA will use tagging to help the network follow up on relevant clusters before the start of any assessments.	Spring 2025
7.	15	Develop use cases for a appropriate way to use tagging by the network and internally by EFSA, establish criteria for tagging	Spring 2025
8.	15	Send protocol for final revision to the network via email.	Beginning 2025
9.	16	Send request to display names of people	November 2025
10.	16	Coordinate between NRLs and Data Providers to ensure interconnection.	-
11.	17	Improve communication and information flow within the country for better communication between CO and RASFF.	

Legend

- Action points for EFSA
- Action points for Network Representatives

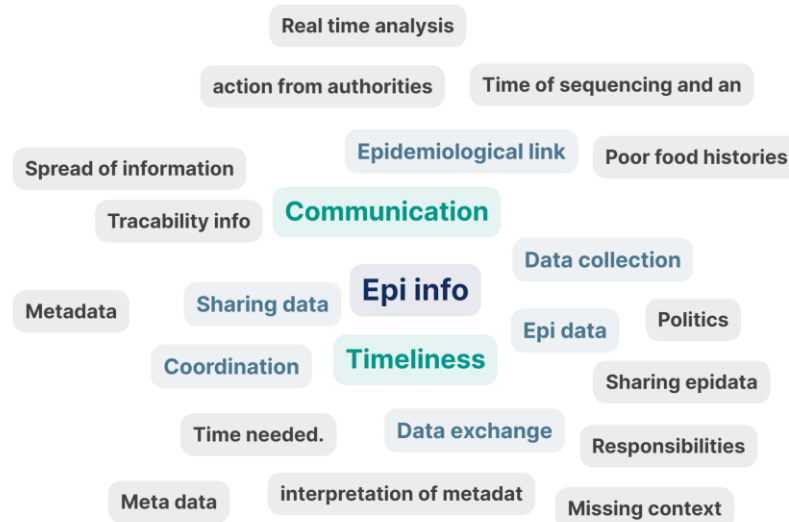


APPENDIX II: Outcome of the SLIDO questions



Which are the challenges in tackling an outbreak starting from a genomic cluster?

Wordcloud Poll 52 responses 35 participants



slido