



Deliverable – Description of a common framework for OH surveillance

OHEJP JIP MATRIX – WP1

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DESCRIPTION OF A COMMON FRAMEWORK FOR
OH SURVEILLANCE -
*A STEP-BY-STEP FRAMEWORK TO SUPPORT THE
DEVELOPMENT OF ONE HEALTH SURVEILLANCE
SYSTEMS FROM EXISTING SURVEILLANCE
PROGRAMS*



1. Introduction

One health is an approach to infectious disease management which acknowledges that multiple factors often influence pathogen dynamics in a population of interest [1]. Factors often considered are those of humans, animals and environment. Diseases such as zoonotic and food borne diseases, that by their very nature frequently cross the human, animal and/or the environment interface, particularly benefit from a One Health approach to disease management [2, 3].

Effective decision making in disease management programs is often underpinned by surveillance data [4]. Surveillance data provide information such as the current status of a disease in the population, the distribution of the disease within the population(s), and patterns in prevalence and distribution over time. This information supports decision makers not only with regards to developing control/eradication/prevention programs but also with evaluating the performance of existing programs. Naturally, disease management programs that take a One health approach, for instance in the control of zoonotic and food borne diseases, are best supported with information from surveillance systems that also subscribe to the One health concept. These surveillance systems are known as One health surveillance systems (OHSS), and aim to share or integrate information across all the areas affected.

There are two logical approaches to creating an OHSS. The first is to create a completely new surveillance system from sample collection through to results dissemination and action. The second approach, is to build upon existing surveillance systems, by integrating relevant information from each system into an overall OHSS. There are pros and cons to both approaches, however, the latter approach notably benefits from an improved potential for a sustainable outcome (given that it builds on established surveillance systems), a lower cost of implementation, avoiding process and data duplication, and creating additional use, and therefore value, for existing data.

Despite the clear benefits of developing an OHSS from existing surveillance programs, the process itself can be complicated. Considerable obstacles, such as practical and legal limitations to data or information sharing, resistance to data or information sharing due to lack of trust between sectors, and understanding the data or information available, must be overcome in the process [5, 6]. The resulting difficulty in setting up an OHSS from existing surveillance programs is reflected in the fact that OHSSs are still the exception rather than the norm, despite the growing need.

To address these obstacles and facilitate the process of developing an OHSS from existing surveillance programs, we sought to create a step-by-step framework to support the process. To inform the framework we gathered information from a variety of sources including literature review, interview of persons associated with successful existing OHSSs, review and analysis of sectoral surveillance systems, and expert opinion. Below we describe the methodology and final outcome of this work.



2. Methods

2.1. Generating and collecting information to populate the framework

Our overarching intention was to create a framework that walked the user through a sequence of steps ultimately resulting in the creation of an OHSS, and outlining important considerations, tips and suggestions along the way. We sought information to populate the framework in the following four ways:

2.1.1. Exploring the commonalities and differences in surveillance approaches to zoonotic and food borne diseases between sectors

In a previous activity we created an inventory of food borne and zoonotic disease surveillance systems in the animal health, human health and food safety sectors across Europe. We collected pre-defined data about the individual surveillance systems, and then analysed these data to explore commonalities and differences between sectors in their surveillance approaches. The results of this work are available at <https://zenodo.org/record/5062548#.Yrw1RnZByUk>

2.1.2. Interview – ‘What works and what does not work when creating an OHSS?’

Before creating a framework to develop an OHSS, it was important to understand what approaches had already been trialled, what had worked and what had not. To that end we decided to interview persons directly involved in the development or execution of existing (or previously existing) surveillance systems.

2.1.2.1. Identifying suitable interview targets

To identify existing (or pre-existing) surveillance systems suitable as a topic of interview we used a two-fold approach. First, we reached out to the members of the MATRIX¹ project under the One Health European Joint Programme (OHEJP) and asked them to contribute information (pathogen, sectors involved, contact information) about any existing (or pre-existing) OHSSs in their country. We then performed a systematic search of the literature to identify OHSSs described in the published literature.

To perform the systematic literature search we built upon the work, and replicated the search methodology, described by Bordier et al.[7]. Our literature search of the databases Scopus, Science Direct and PubMed, 1 October 2021, returned 1282 records, which were reduced through three screening steps to 69 records for extraction. Given the aim of the literature search was to identify existing OHSSs and relevant persons to interview about those systems, our variables for extraction included: the type of study; the pathogen or disease under

¹ MATRIX is a project of the [One Health European Joint Programme \(OHEJP\)](#), a partnership of 44 food, veterinary and medical laboratories and institutes across Europe and the [Med-Vet-Net Association](#).

MATRIX connects existing cross-sectorial One Health programmes in European countries. Today, 19 partner institutes representing the animal health, public health and food safety sectors from 12 countries continue a collaboration that started early in 2020 and will end in December 2022. More information can be found [here](#).



surveillance; the sectors included in the surveillance system; whether data or information sharing occurred; whether data or information sharing occurred on a regular basis; at what point in the surveillance pathway data sharing occurred; the contact person for the surveillance system; and an assessment on suitability of the OHSS for interview. Through this process 21 surveillance systems were identified as potentially suitable for interview.

A third approach was employed, when interviewees suggested other systems and persons to interview. This 'snow ball' methodology, up until present, identified an additional two potential OHSSs and contacts for interview.

2.1.2.2. Interview

The purpose of the interview was to explore the question, 'what works and what doesn't work when creating a One Health surveillance system from existing surveillance programs?'

To encourage deep exploration of the question, the interview followed a semi-structured format supported by an interview guide. The interview guide was drafted and then reviewed by both MATRIX WP1 members and EFSA representatives before finalisation. The interview guide provided a background to the study, interview instructions for the interviewer, and example interview questions to address each of the three themes: 1. Current structure of the system; 2. Development of the system; 3. Current performance and improvements to the system.

All interviews were performed by the immediate project members (two persons), who were trained to deliver the interviews in a standard manner. Consent to participate in the interview was obtained verbally at the beginning of the interview, with a follow-up e-mail post-interview to confirm consent in writing. Interviews were performed in the language most comfortable to the interviewees. For subsequent analysis, the interviews were recorded and then transcribed verbatim by the project team. Upon completion, transcriptions were returned to the interviewees to confirm the transcription, make corrections, and add comments or additional information where needed.

Initial notes were taken on key points during the interview and incorporated into the framework as appropriate. Full analysis will commence once all interviews are completed and the data will undergo thematic analysis as part of a grounded theory approach. The results of this in-depth analysis will also be integrated into the framework.

2.1.3. Expert opinion

As we developed the framework, we referred back to our WP members during meetings for comments and contributions on key factors encountered in their experiences that either supported or undermined efforts towards developing OHSSs from existing programs. We also appealed consortium wide for experiences and learnings in this area of OHSS creation, at key points in the development stage. All contributions were noted and incorporated into the framework as appropriate.



2.1.4. Review of other project outputs

The surging interest in One health approaches to disease management have led to a large number of research initiatives in the field, including surveillance. As such we sought to understand the findings from these projects, specifically OHEJP COHESIVE, NOVA and ORION, through reviewing outputs and attending project specific conferences. Where appropriate we incorporated relevant findings into the framework.

2.2. Interactive website development

To create a publicly accessible and interactive platform to deliver the framework, we created a website using WordPress, an open-source content management system built on PHP and MySQL, licensed under the GPLv2.

3. Results

3.1. Interviews

Seven interviews have been completed (see Table 1) and we continue to reach out to the remaining 13 contacts associated with an OHSSs identified as suitable for interview. Once all interviews are completed and transcribed, we will commence thematic analysis with the complete data set. Initial data from the interviews have been incorporated into the framework as appropriate, data from the deeper thematic analyses described will also be integrated once completed.

Table 1. Completed interviews of One Health Surveillance Systems, 30 July 2022

Country	Pathogen(s) under surveillance	Interview Status	Sector represented by interviewee(s)
Italy	West Nile Virus	Completed	Animal Health
Austria	West Nile Virus	Completed	Animal Health
France	Salmonella	Completed	Food Safety
England	AMR	Completed	Animal Health
Tanzania	Zoonotic pathogens	Completed	Animal Health
The Netherlands	Zoonotic pathogens	Completed	Human Health
Norway	Listeria	Completed	Food Safety

3.2. Framework

The interactive website, the framework structure, and the preliminary information populating the structure are complete and accessible at:



<https://ejp-matrix.eu/>

This *beta* version of the framework was developed based on the results of the 'Commonalities and differences' analysis (2.1.1), expert opinion solicitation (2.1.3), review of other project outcomes (2.1.4) and preliminary results from the interviews (2.1.2).

The framework was organised into seven steps, that the user could follow in a step-wise sequential manner to arrive at an OHSS, or alternatively use as stand alone exercises as needed. The steps are as follows:

1. Establish the core working group
2. Stakeholder analysis
3. Define the objectives/purpose of the system
4. Map available data
5. Determine where data or information sharing should occur
6. Design and implement the system
7. Evaluate

For each step, a description is provided along with comments, suggestions and lessons learned to facilitate the process.

4. Discussion

The step-by-step framework to facilitate the process of developing an OHSS from existing surveillance systems has been created as an interactive website and is available in beta version at <https://ejp-matrix.eu/>. Currently the framework is available in beta version to accommodate the expectation that modifications and refinements will be required following a pilot testing phase that is planned to take place July through October 2022. Furthermore, additional improvements are expected with completion of all interviews and full thematic analysis of the data. Nonetheless, the current version will likely be a close representation of the finalised product.

There are limitations to this work in its current state. The most notable being an over-representation of the animal health sector in the interviews of existing OHSSs. This may have biased our results to the perceptions of this sectoral background, and reduced insights from the human health and environmental health perspectives. We are actively following up representation from both these sectors in the OHSSs that have already been the topic of interview and those that are planned. In doing so, we expect to have more even representation across the topics when the interviews are completed and we commence to thematic analysis of the data.

Beyond the activities described above, we expect the framework to be updated and refined on an ongoing basis. Firstly, as with any research activity, this project has unearthed more topics



of research, that when addressed will add to the framework. Secondly, as the field continues to grow the framework will need to reflect the new experiences and perhaps contexts within which it is employed. For those reasons, the framework cannot be seen as a static tool, but rather a tool in constant refinement, and therefore, ongoing relevancy.

5. References

1. Degeling, C., et al., *Implementing a One Health approach to emerging infectious disease: reflections on the socio-political, ethical and legal dimensions*. BMC Public Health, 2015. **15**(1): p. 1307.
2. World Health, O., et al., *Taking a multisectoral, one health approach: a tripartite guide to addressing zoonotic diseases in countries*. 2019, Geneva: World Health Organization.
3. Ghai, R.R., et al., *A generalizable one health framework for the control of zoonotic diseases*. Scientific Reports, 2022. **12**(1): p. 8588.
4. Lee, L.M. and S.B. Thacker, *The cornerstone of public health practice: public health surveillance, 1961--2011*. MMWR Suppl, 2011. **60**(4): p. 15-21.
5. Stärk, K.D.C., et al., *One Health surveillance – More than a buzz word?* Preventive Veterinary Medicine, 2015. **120**(1): p. 124-130.
6. Uchtman, N., et al., *Barriers to, Efforts in, and Optimization of Integrated One Health Surveillance: A Review and Synthesis*. EcoHealth, 2015. **12**(2): p. 368-384.
7. Bordier, M., et al., *Characteristics of One Health surveillance systems: A systematic literature review*. Prev Vet Med, 2020. **181**: p. 104560.