A multi-country One Health simulation exercise

Lena Tuominen

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Scope

- An exercise to allow the European countries to practice, assess, and improve their One Health cooperation in a simulated foodborne outbreak situation.
  - Public Health
  - Animal Health
  - Food Safety

Choose the right exercise

- The nature and scale of the exercise depends e.g. on the aims and objectives, budget, and available resources
- Discussion-based exercises (orientation exercise; tabletop exercise)
- Operation-based exercises (drill; functional or command post exercise; full-scale exercise)
- Tabletop exercise
  - Informal and stress-free environment
  - The participants are guided by a facilitator and encouraged to engage in a roundtable discussion based on a simulated scenario
  - A series of scripted injects are given to the participants, presenting the problems that need to be tackled
  - Stimulates the participants' problem-solving capacities and develops the communication strategy required to respond effectively

Pick the team

- In our case, we had 9 experts from 5 different countries forming the working group
- The team was responsible for writing
  - a realistic cross-sector scenario that could be executed in multiple countries
  - a handbook for national exercise leaders/local exercise leaders
  - a handbook for evaluators
  - a questionnaire for general evaluation and follow-up
  - a report, conducting dissemination webinars, and writing a publication

Set the aims and objectives of the exercise

- In our case, the overall aim was to practice the One Health capability, capacity, and interoperability at a national level, across public health (PH), animal health (AH) and food safety (FS) sectors.

Objectives:

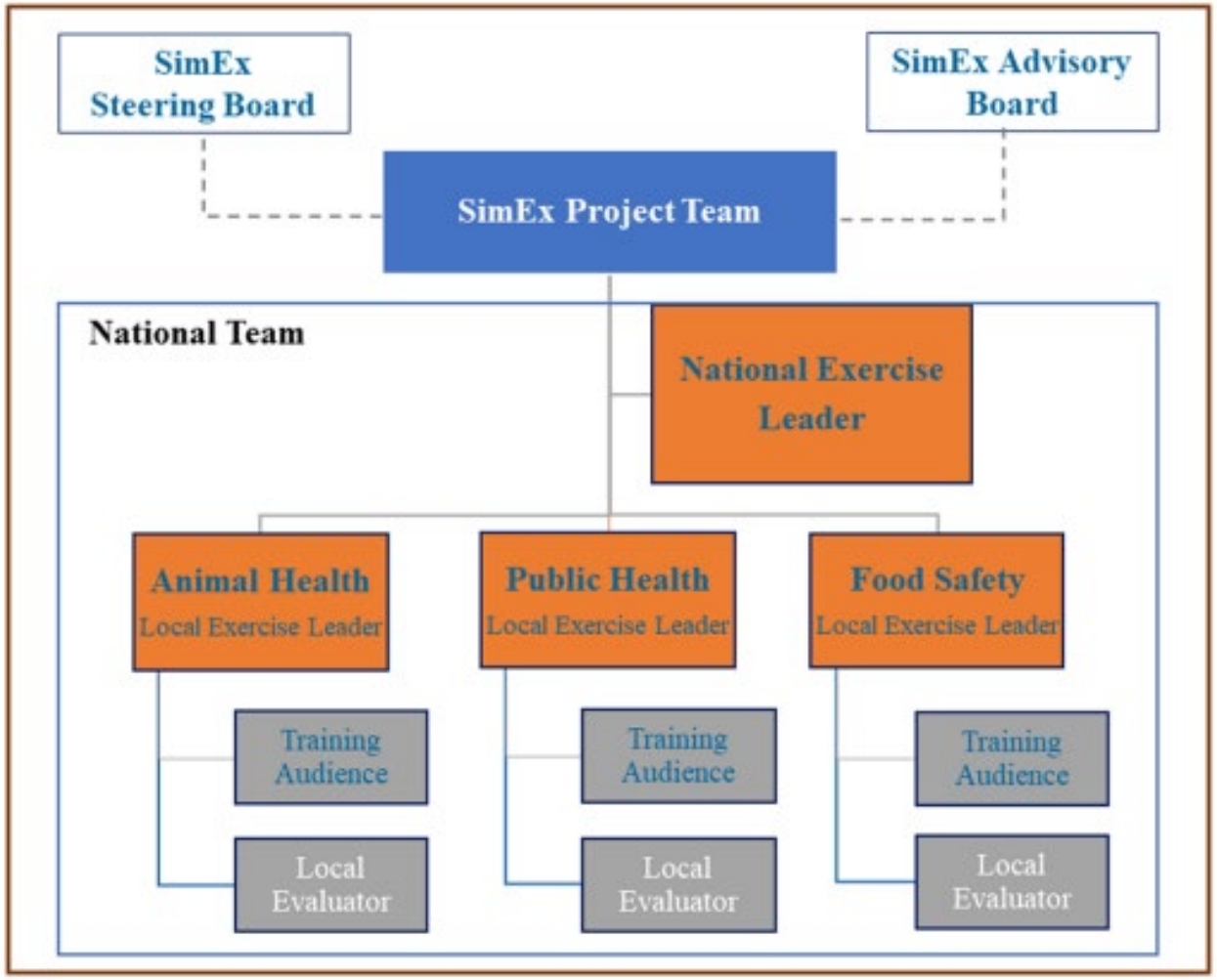
1. Roles and functionality – *Who does what in an outbreak situation?*
2. Harmonised data collection and data sharing – *Sharing is caring*
3. Communication – *Let's work together (inside-outside)*

- Each country could also set its objectives.

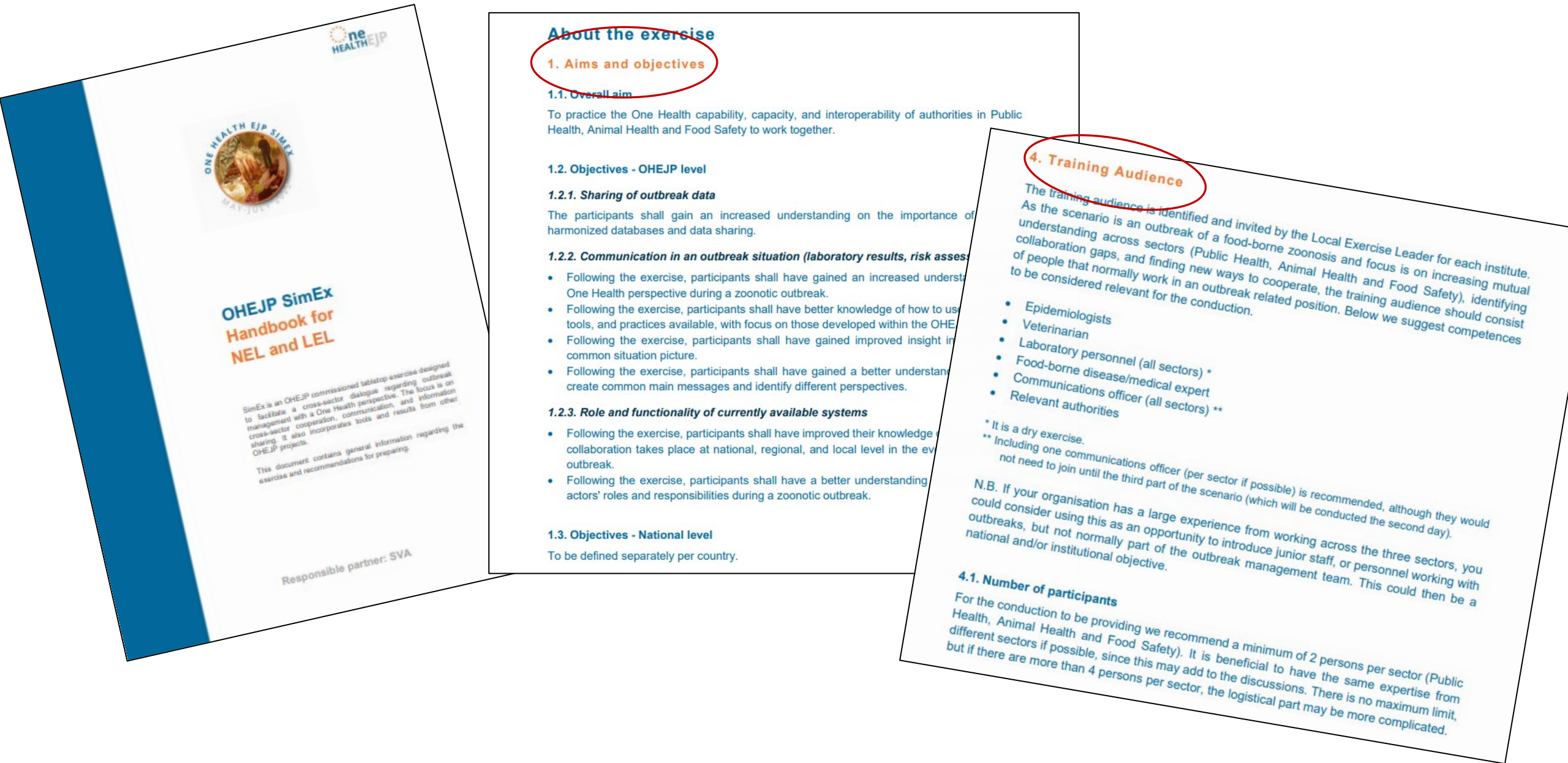
Recruit the countries

- Contact person in each country
- Selection of National and Local exercise leaders
- Selection of evaluators
- Preparatory workshop for exercise leaders
- Preparatory workshop for evaluators
- The countries translated and adopted the scenario and added objectives
- Each country could invite other institutes according to its needs
- 2-day exercise in participating countries
- To limit the exercise, the outbreak was at a national level
- Supervision and support by 2 team members from the project team during the conduct
- National report

Overview of the project organisation



Create handbooks for the exercise leaders



OHEJP SimEx
Handbook for
NEL and LEL

SimEx is an OHEJP commissioned tabletop exercise designed to facilitate a cross-sector dialogue regarding outbreak management with a One Health perspective. The focus is on cross-sector cooperation, communication, and information sharing. It also incorporates tools and results from other OHEJP projects.

This document contains general information regarding the exercise and recommendations for preparing.

Responsible partner: SVA

About the exercise

1. Aims and objectives

1.1. Overall aim

To practice the One Health capability, capacity, and interoperability of authorities in Public Health, Animal Health and Food Safety to work together.

1.2. Objectives - OHEJP level

1.2.1. Sharing of outbreak data

The participants shall gain an increased understanding on the importance of harmonized databases and data sharing.

1.2.2. Communication in an outbreak situation (laboratory results, risk asses

- Following the exercise, participants shall have gained an increased understa One Health perspective during a zoonotic outbreak.
- Following the exercise, participants shall have better knowledge of how to us tools, and practices available, with focus on those developed within the OHE
- Following the exercise, participants shall have gained improved insight in common situation picture.
- Following the exercise, participants shall have gained a better understan create common main messages and identify different perspectives.

1.2.3. Role and functionality of currently available systems

- Following the exercise, participants shall have improved their knowledge collaboration takes place at national, regional, and local level in the ev outbreak.
- Following the exercise, participants shall have a better understanding actors' roles and responsibilities during a zoonotic outbreak.

1.3. Objectives - National level

To be defined separately per country.

4. Training Audience

The training audience is identified and invited by the Local Exercise Leader for each institute. As the scenario is an outbreak of a food-borne zoonosis and focus is on increasing mutual understanding across sectors (Public Health, Animal Health and Food Safety), identifying collaboration gaps, and finding new ways to cooperate, the training audience should consist of people that normally work in an outbreak related position. Below we suggest competences to be considered relevant for the conduction.

- Epidemiologists
- Veterinarian
- Laboratory personnel (all sectors) *
- Food-borne disease/medical expert
- Communications officer (all sectors) **
- Relevant authorities

* It is a dry exercise.
** Including one communications officer (per sector if possible) is recommended, although they would not need to join until the third part of the scenario (which will be conducted the second day).

N.B. If your organisation has a large experience from working across the three sectors, you could consider using this as an opportunity to introduce junior staff, or personnel working with outbreaks, but not normally part of the outbreak management team. This could then be a national and/or institutional objective.

4.1. Number of participants

For the conduction to be providing we recommend a minimum of 2 persons per sector (Public Health, Animal Health and Food Safety). It is beneficial to have the same expertise from different sectors if possible, since this may add to the discussions. There is no maximum limit, but if there are more than 4 persons per sector, the logistical part may be more complicated.

Scenario: colour-coded for exercise leaders (orange) and training audience (green)

- exercise document -
- for SimEx conduction only –

Inject number	1.1 Exercise direction Public Health (PH) – Outbreak Introduction
Estimated time	20 minutes
Purpose of inject	Introduce the training audience to the scenario. Understanding how each sector reacts to the information and acts at the early stages of an outbreak situation.
Condition to continue to next inject	All sectors have had time to take in the information and participate in the discussion.
Expected outcome	The Public Health Authority (PHA) assumes the notification as a possible outbreak and takes the due diligences.
Event (short description)	The national PHA is informed by the responsible laboratory about a possible Salmonella outbreak. The notification follows the identification of a cluster of *Salmonella Typhimurium* isolates, associated with 7 human cases, identified by the responsible laboratory.
Main question	*(See inject)*
Follow up questions	1. Considering the real case scenario in which you are not together in the same room would you normally consider integrating the other sectors at this early stage? 2. If yes, please describe your response in such a case? Is an action plan prepared in advance?

- exercise document -
- for SimEx conduction only –

Inject number 1.1 Exercise direction PH Outbreak Introduction

Scenario date: 25 April 2023

The laboratory responsible for the surveillance of human cases of salmonellosis notifies that a cluster of *Salmonella Typhimurium* isolates has been recently identified.

The cluster was confirmed by WGS/MLVA and consists of seven human cases with isolates of *Salmonella Typhimurium* that differ by 0 – 2 AD (cg-allelic differences)/0 – 2 SNP (single nucleotide polymorphism) and are of the same sequence-type ST19 (MLST). Strains were multidrug resistant to Ampicillin, Sulphonamides, Tetracyclines, Streptomycin and Phenicol.

Cases have been reported from three different regions in the country. Infections occurred between 8th March and 12th April and the cases are 5 females (38y, 8y, 50y, 9y and 44y) and 2 males (15y and 58y).

Further information on the cases will be collected and reported as soon as possible.

Considering this information, what actions would be taken?

What would the case definition be at this point?

Scenario: make it realistic and appealing – newspaper, interviews, case studies etc.

EU PROGRAMME FOR A BETTER WORLD

After years of research and cooperation the EU funded programme for One Health is about to end. Results are impressive and will surely lead to improvement better healthcare, animal welfare, food safety and environmental understanding.

Continue reading on page 9

NEWS OF TODAY

EUROPE, SATURDAY, MAY 27, 2023 €2.5

Family dinner led to disaster – grandpa to hospital

- Large SALMONELLA outbreak
- Schools, restaurans and families struck
- Almost 100 persons sick
- Governments does nothing
- Source unknown

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Continue reading on page 4–5

Peter, grandson of the hospitalised man demands answers – how could this happen to granddad? Photos: Istock

Mans best friend – or bringer of death? Photo: Istock

Pet owners in fear as deadly disease strikes

According to well-informed sources several pet owners have been severely sickened recently. Especially children have been sick and hospitalised. Rumours has it that it is a rare type of salmonella, potentially infecting both pets and humans. Now families struggle to dare to tend to their pets and call for the governments to act.

Continue reading on page 17

Table 1. Results from the interviews with the patients.

Patient's number	Age	Gender	Collective case (Y/N)	Type	Region	Date of onset (first symptoms)	Hospitalisation Y/N	Type of consumed food during the previous days before the onset. Place of consumption (*from a short interview*).
1	38	F	Y	same family	A	2023-03-10	N	Minced meat, eggs, poultry and cheese. Went to Fast food restaurant A
2	8	F	Y	same family	A	2023-03-08	Y	Minced meat, eggs, poultry and cheese. Went to Fast food restaurant A
3	50	F	N		B	2023-03-15	N	salad, raw vegetables, eggs, raw mincemeat, raw milk cheese and shellfish
4	15	M	N		C	2023-03-20	Y	Tiramisu, chocolate mousse, poultry, no cheese and a few raw vegetables. Lunch at fast food restaurant B (Nuggets).
5	9	F	N		A	2023-04-01	N	No meat. Cheese, chocolate mousse, raw vegetables, ham and salami.

Table 3. Case-case study

Number, percentage exposed and univariate odds ratios (OR) with 95 % confidence interval (CI) in cases from the outbreak with *Salmonella Typhimurium* 2023 compared to control cases 2019 – 2022 (previous cases with salmonellosis that have answered the standard questionnaire, excluding clusters with > 5 cases).

	Outbreak cases (n=53)		Control cases (n=139)		Univariate model		
Food item	n	%	n	%	OR	95% CI	P-value
Minced meat (beef)	41	77	63	47	4.1	2.0 - 8,5	<0.001
Iceberg lettuce	36	68	57	42	3.0	1.6 - 5.9	0.001
Apples	35	66	68	50	2.0	1.1 - 3.9	0.04
Grapes	21	46	45	33	1.7	0.9 - 3.3	0.10
Raw milk cheese	11	20	16	12	1.6	0.9 - 4.7	0.10
Tomato	41	78	94	70	1.6	0.8 - 3.4	0.19
Ready-to-eat meals	13	24	23	17	1.6	0.8 - 3.5	0.21
Carrots	26	50	60	44	1.3	0.7 - 2.4	0.46
Yellow onion	31	59	77	57	1.1	0.6 - 2.4	0.59
Bacon	20	38	48	36	1.1	0.6 - 2.2	0.67
Eggs	33	62	82	59	1.1	0.2 - 2.2	0.68
Cucumber	39	74	99	73	1.1	0.6 - 2.3	0.75
Smoked ham	23	44	64	47	0.9	0.5 - 1.7	0.74
Red onion	21	39	59	44	0.9	0.5 - 1.7	0.72
Spinach	12	22	39	29	0.8	0.4 - 1.6	0.45

Evaluator's handbook and After Action Review (*hot debrief*)

- exercise document -
- for SimEx conduction only -

	EVALUATOR'S TEMPLATE
Inject details	
Inject number	**1.3**
Purpose of inject	• AH/FS will better understand how PH works with epidemiologic investigations. • PH – explain how epidemiologic investigations can be done. • Assess intersectoral communication.
Expected outcome	The team has discussed and identified the common food items and possible sources of infection (tomato, lettuce, and meat).
Event (short description)	The results from the interviews of the patients are ready.
Main questions	*After looking at the results can you draw any relevant conclusions from the interviews?* *Which hypotheses on possible food sources for the outbreak can you formulate at this point?* *Which additional steps may be taken in the outbreak investigation?*
Follow up questions	1. Where would you go from here and what sectors would be involved in the decision? 2. Have you noticed any advantage in analysing the results together with the other sectors? If yes, which sector and how?
Evaluator's notes	

1. AAR Part 1

1.1. Summary of objectives for part 1 – Roles and functions of available systems

- Following the exercise, participants will have declared their cooperation on how and when collaboration takes place at the national, regional, and local levels in the event of a zoonotic outbreak.
- Following the exercise, participants will have clarified their and other actors' roles and responsibilities during a zoonotic food-borne outbreak.
- After the exercise, the Collective Thinking on the currently available early warning systems (at national and international levels) and when they should be activated would be improved.

1.2. Questions to the training audience for part 1

1. Did the discussions provide a greater understanding of the other sectors?
2. Do you know more about the other sectors' outbreak management now than before this part?
3. Has your understanding of the other sectors' roles and responsibilities increased?
4. Did you identify any specific areas where your organisation would benefit from further understanding?
5. Were there any situations where the actions or assessments of the sectors would differ during similar incidents? Why?
6. Did you identify any formal decisions or policies that would further improve cross sector cooperation?
7. Which areas were identified for requiring improvement?

Questionnaire for each participant

The objectives

Role and functionality of all currently available systems

Answer the following statements using a scale from 1-4 (1. Strongly disagree, 2. Disagree, 3. Agree, 4. Strongly agree).

	Strongly disagree	Disagree	Agree	Strongly agree
This exercise has helped you to be more aware of the currently available warning systems and emergency action plans in place (both at national level and in the European Union) and when they should be activated.	O	O	O	O
The exercise was successful in stressing the importance of notifying events across sectors.	O	O	O	O
Your understanding of what other sectors expect from your sector has increased.	O	O	O	O

Communication in an outbreak situation

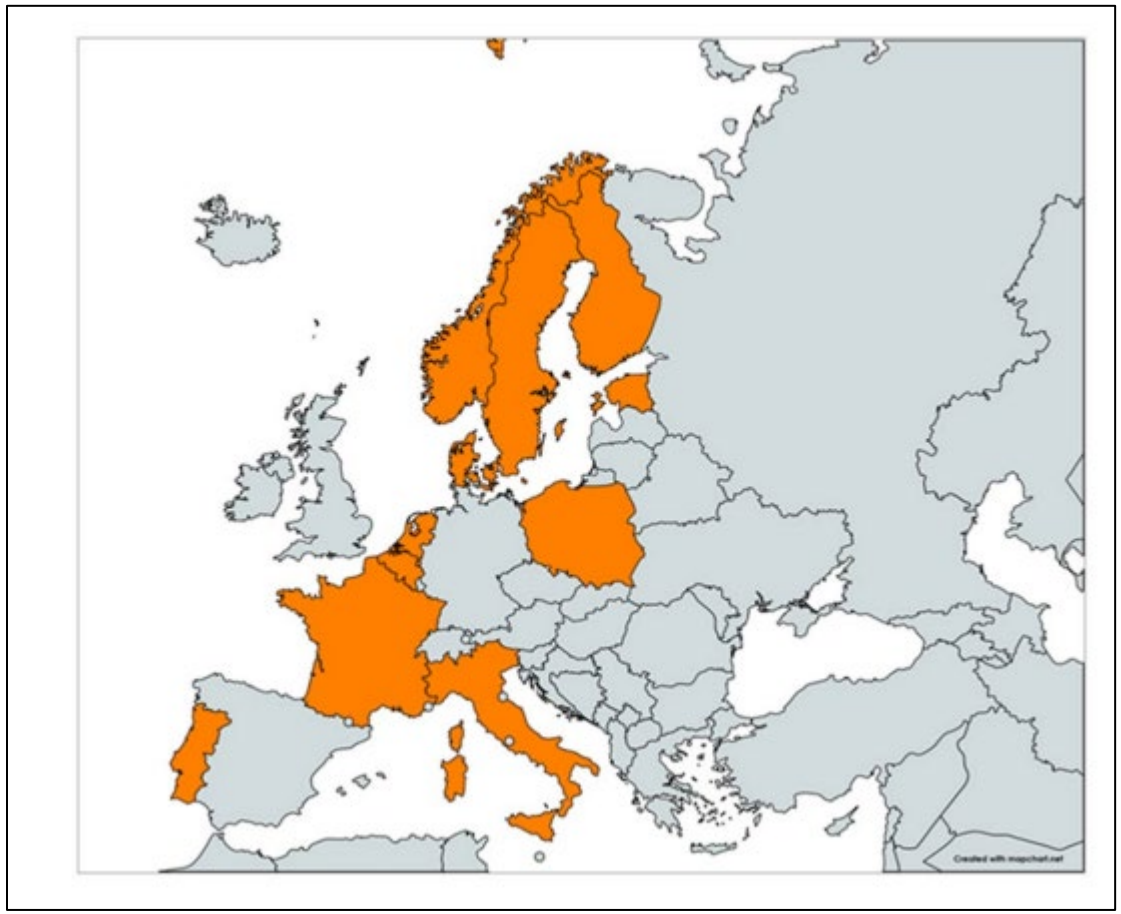
Answer the following statements using a scale from 1-4 (1. Strongly disagree, 2. Disagree, 3. Agree, 4. Strongly agree).

	Strongly disagree	Disagree	Agree	Strongly agree
The exercise clarified the importance of having a coordinated action plan.	O	O	O	O
The exercise highlighted the advantages of including professionals from all sectors when assembling an outbreak investigation team.	O	O	O	O
You gained a better understanding of the different communicational needs and different target audiences.	O	O	O	O

Participating countries: 11
Participants: 255

Challenges:

- National differences
- Language barrier
- Keep personnel away from their everyday tasks for 2 full days (initially 3 days)
- Too complicated to have an international outbreak (RASFF)
- Interesting and intriguing scenario that fits all countries



Timeline*

Foundation		Design and Develop						Conduction			Evaluation and Dissemination				
Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
• Identify scope • Reach out to partner institutes • Set up website		• Choose pathogen • Set up scenario framework • Create role descriptions for participants • Decide evaluation methods • Identify relevant tools			• Write injects • Organise workshops • Support institutes preparation			• Supervise country conductions • Coordinate national surveys			• Analyse surveys and national reports • Identify tools suitable for continued development of a OH approach			• Write final reports • Prepare dissemination workshop • Present to relevant stakeholders	

**Recruitment of project leader, team members, budget, work plan etc. not included. In total over 2 years.*

Read more: Zenodo – OHEJP SimEx

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EDITED BY
Kristina Kadlec,
Independent Researcher, Wunstorf, Germany

REVIEWED BY
Frederique Pasquali,
University of Bologna, Italy
Faisal Ahmad Khan,
Technical University of Denmark, Denmark

*CORRESPONDENCE
Anna Omazic
anna.omazic@sva.se

†PRESENT ADDRESS
Frederico Alves,
European Food Safety Authority (EFSA), Parma, Italy

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A multi-country One Health foodborne outbreak simulation exercise: cross-sectoral cooperation, data sharing and communication

Frederico Alves[1,2†], Karin Artursson[2], Juliette Bloch[3], Anne Brisabois[4], Hein Imberechts[5], Pikka Jokelainen[6], Roberto La Ragione[7,8], Mats Lindblad[9], Rebecca Litzell Forss[2], Denise A. Marston[7], Omid Parvizi[10], Lena Tuominen[2] and Anna Omazic[11]*

[1]Department of Infectious Diseases, National Institute of Health Dr. Ricardo Jorge (INSA), Lisbon, Portugal, [2]Office of Science and International Collaboration, National Veterinary Institute (SVA), Uppsala, Sweden, [3]Department of Health Alerts and Vigilances, French Agency for Food, Environmental and Occupational Health & Safety (ANSES), Maisons-Alfort, France, [4]Department of Strategy and Program, French Agency for Food, Environmental and Occupational Health and Safety (ANSES), Maisons-Alfort, France, [5]Sciensano, The Belgian Institute for Health, Brussels, Belgium, [6]Infectious Disease Preparedness, Statens Serum Institut, Copenhagen, Denmark, [7]School of Veterinary Medicine, University of Surrey, Guildford, Surrey, United Kingdom, [8]School of Biosciences, University of Surrey, Guildford, Surrey, United Kingdom, [9]Department of Safe Food, Swedish Food Agency, Uppsala, Sweden, [10]Institute of Bacterial Infections and Zoonoses, Friedrich-Loeffler-Institut (Federal Research Institute for Animal Health), Jena, Germany, [11]Department of Chemistry, Environment and Feed Hygiene, National Veterinary Institute (SVA), Uppsala, Sweden

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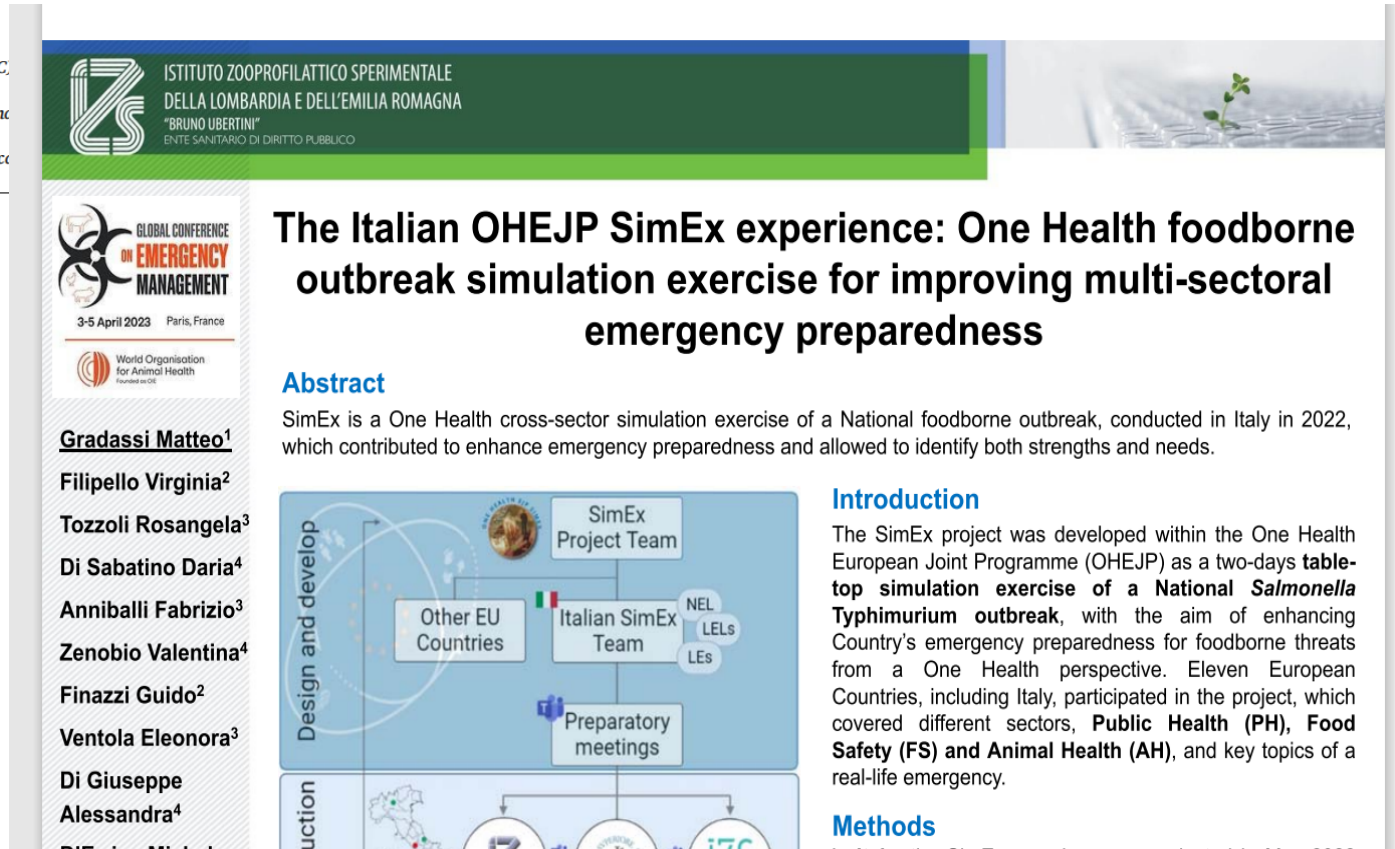
Intersectoral collaboration in a One Health approach: Lessons learned from a country-level simulation exercise

Vera Manageiro [a,b,*], Ana Caria [c,1], Cristina Furtado [a,1], SimEx Portuguese Team[2], Ana Botelho [d], Mónica Oleastro [e], Sandra Cavaco Gonçalves [d,**]

[a] Department of Infectious Diseases, National Institute of Health Doutor Ricardo Jorge, Lisbon, Portugal
[b] ECDC Fellowship Programme, Public Health Microbiology Path (EUPHEM), European Centre for Disease Prevention and Control (ECDC)
[c] Animal Health and Epidemiology Division, Directorate-General for Food and Veterinary (DGAV), Lisbon, Portugal
[d] National Reference Laboratory for Animal Health, Laboratory of Bacteriology and Mycology, National Institute of Agrarian and Veterinary Oeiras, Portugal
[e] National Reference Laboratory for Gastrointestinal Infections, Department of Infectious Diseases, National Institute of Health Doutor Rica



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Gradassi Matteo[1]
Filipello Virginia[2]
Tozzoli Rosangela[3]
Di Sabatino Daria[4]
Anniballi Fabrizio[3]
Zenobio Valentina[4]
Finazzi Guido[2]
Ventola Eleonora[3]
Di Giuseppe Alessandra[4]

The Italian OHEJP SimEx experience: One Health foodborne outbreak simulation exercise for improving multi-sectoral emergency preparedness

Abstract

SimEx is a One Health cross-sector simulation exercise of a National foodborne outbreak, conducted in Italy in 2022, which contributed to enhance emergency preparedness and allowed to identify both strengths and needs.

Introduction

The SimEx project was developed within the One Health European Joint Programme (OHEJP) as a two-days **table-top simulation exercise of a National *Salmonella* Typhimurium outbreak**, with the aim of enhancing Country's emergency preparedness for foodborne threats from a One Health perspective. Eleven European Countries, including Italy, participated in the project, which covered different sectors, **Public Health (PH), Food Safety (FS) and Animal Health (AH)**, and key topics of a real-life emergency.

Methods

Thank you!

Lena.Tuominen@slu.se