



Scientific cooperation among Europe's One Health agencies

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ARTICLE INFO

Keywords:

One health
Scientific cooperation
Coordination
Capacity building
Communication
Europe

ABSTRACT

Over the years, the five EU agencies (ECDC, ECHA, EEA, EFSA, and EMA) dealing with One Health matters, have established scientific cooperation on a range of cross-cutting topics, including zoonoses, emerging risks, and antimicrobial resistance. Effective cooperation requires coordination of efforts, clear communication, and joint management of activities to achieve shared objectives. This publication analyses various “cooperation tools” that are indicated in Memoranda of Understanding (MoUs) and working arrangements among the five agencies and identifies joint publications on subjects on which agencies have been cooperating. Finally, the paper recommends that building on the success of the longstanding collaboration among the EU Agencies, additional scientific cooperation mechanisms should be explored to support multi-sectoral approaches and to further the One Health implementation in the EU.

1. Introduction

European Union (EU) Agencies act as knowledge centres, supporting the formulation, adoption, and implementation of EU policies by decision makers [1]. Cooperation among EU agencies is crucial in terms of coordination, expertise, knowledge sharing, synergy creation and networking. Collaboration between agencies is often formalised through bilateral ‘working arrangements’ or ‘memoranda of understanding’ (MoU).

The European Centre for Disease Prevention and Control (ECDC), the European Chemicals Agency (ECHA), the European Environment Agency (EEA), the European Food Safety Authority (EFSA), and the European Medicines Agency (EMA) have mandates at the intersection of human, animal, and environmental health topics falling under the One Health approach. This approach acknowledges that the human, animal, plant and ecosystem domains are closely inter-connected [2]. These five Agencies will be referred to as One Health Agencies hereinafter.

Over the past two decades, the One Health Agencies have collaborated on many cross-cutting topics, such as zoonoses (e.g. the joint annual One Health zoonoses report), emerging risks (e.g. quarterly reports on avian influenza by EFSA and ECDC), and antimicrobial

resistance (e.g. joint ECDC/EFSA/EMA reports on antimicrobial consumption and resistance in animals and humans, as well as joint procurement initiatives such as the ECDC/EFSA's VectorNet project [3]). The EEA routinely contributes its expertise to EFSA's foresight activities on food and feed safety and involves the ECDC and EFSA as partners in the Climate and Health Observatory. EFSA and EEA engage in knowledge-sharing initiatives and collaborate on assessing the burden of disease from lead exposure in Europe. EMA and ECDC worked in very close cooperation during the response to the Covid-19 pandemic and have well-established collaborations in the area of vaccines (e.g. Vaccines Monitoring Platform and the joint European Vaccination Information Portal). The agencies also work under the shared remit of the Regulation on Serious Cross-Border Threats to Health and the ‘One Substance One Assessment’ initiative [4,5].

In 2022, the One Health Agencies and the Joint Research Centre (JRC) of the European Commission (EC) co-organised the ONE – Health, Environment and Society – Conference. The conference convened experts and stakeholders from diverse sectors to address the need for adopting a One Health approach to prevent and counteract to health and environmental crises. International health emergencies such as the COVID-19 pandemic, Ebola outbreaks, antimicrobial resistance,

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<https://doi.org/10.1016/j.onehlt.2025.101129>

Received 5 June 2025; Received in revised form 3 July 2025; Accepted 3 July 2025

Available online 5 July 2025

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ecosystem degradation, environmental pollution, and climate change, demonstrate the necessity for implementing a One Health approach, to achieve more resilient health systems and accelerated global action [6]. The Quadripartite of the United Nations, consisting of the Food and Agriculture Organization (FAO), United Nations Environment Programme (UNEP), World Health Organization (WHO), and World Organization for Animal Health (WOAH), issued a call to action, emphasizing the need for enhanced global collaboration to address these challenges [6]. In Europe, the Commission's Group of Chief Scientific Advisors has formulated policy recommendations for governance structures to promote cross-sector collaboration on One Health [7]. In her Mission letter to the new Health and Animal Welfare Commissioner, Ursula von der Leyen, president of the European Commission, asked the Commissioner to build on the One Health approach, emphasizing the interconnectedness of people, animals, plants, and the environment, recognising its crucial role in safeguarding health across all sectors [8].

Following the ONE Conference in 2022, the One Health Agencies have established a Cross-Agency Task Force on One Health [9]. In May 2024, the five agencies published jointly a framework for action that was reported earlier in this Journal [10]. The aim of the framework is to strengthen cooperation to support the implementation of the One Health approach, around five strategic objectives: strategic coordination, research coordination, capacity building, stakeholder engagement, and joint activities and partnerships. This will help the agencies to provide transdisciplinary scientific advice, strengthen the evidence-base for One Health, and jointly contribute to the One Health agenda in the EU [11].

In this publication the authors describe cooperation tools used among the One Health Agencies and identified joint publications indicating subjects on which the Agencies have been cooperating.

2. Materials and methods

2.1. Review of Memoranda of Understanding and identification of cooperation tools

A Memorandum of Understanding (MoU) is an agreement between two or more parties/institutions. While MoUs are not legally binding, they serve to document each collaborator's expectations or intentions, highlighting their mutual willingness to pursue a common course of action [12].

The existing MoUs among the One Health Agencies were identified, and each document was reviewed in detail. A table was created, listing the cooperation activities mentioned in each MoU, allowing for the identification of common activities across the MoUs. The activities were grouped and classified under a common "cooperation tool" utilised for these activities that enable effective collaboration between the One Health Agencies. These tools are used by the Agencies to coordinate their efforts, communicate, and manage joint activities to achieve shared objectives. The current work was conducted between April and October 2024.

2.2. Literature review

A literature review was conducted to identify publications with authors affiliated to at least two different One Health Agencies. It includes joint Agency publications and other scientific publications where staff members from the One Health Agencies have contributed. The search was carried out on 16 September 2024, using TIM Technology which is part of the Tools for Innovation Monitoring (TIM), developed and maintained by the Joint Research Centre of the European Commission. The following query was used:

*(org:(“European Food Safety Authority” OR *EFSA*) AND.
org:((*ECDC* OR “European Centre for Disease Prevention and Control”) OR (EMA OR EMEA OR “European Medicines Agency”) OR (EEA OR “European Environment Agency”) OR (*ECHA* OR “European Chemicals Agency”))) OR.*

*(org:(EMA OR EMEA OR “European Medicines Agency”) AND.
org:((*ECDC* OR “European Centre for Disease Prevention and Control”) OR (“European Food Safety Authority” OR *EFSA*) OR (EEA OR “European Environment Agency”) OR (*ECHA* OR “European Chemicals Agency”))) OR.*

*(org:(*ECDC* OR “European Centre for Disease Prevention and Control”) AND.*

*org:(EMA OR EMEA OR “European Medicines Agency”) OR (“European Food Safety Authority” OR *EFSA*) OR (EEA OR “European Environment Agency”) OR (*ECHA* OR “European Chemicals Agency”))) OR.
(org:(EEA OR “European Environment Agency”) AND.*

*org:((*ECDC* OR “European Centre for Disease Prevention and Control”) OR (“European Food Safety Authority” OR *EFSA*) OR (EMA OR EMEA OR “European Medicines Agency”) OR (*ECHA* OR “European Chemicals Agency”))) OR.*

*(org:(*ECHA* OR “European Chemicals Agency”) AND.*

*org:((*ECDC* OR “European Centre for Disease Prevention and Control”) OR (“European Food Safety Authority” OR *EFSA*) OR (EMA OR EMEA OR “European Medicines Agency”) OR (EEA OR “European Environment Agency”))).*

The queries identified scientific publications, EU-funded projects or patents with authors affiliated to at least two different One Health Agencies. TIM searches for results in the scientific literature in a recent copy of the SCOPUS database. Hence, scientific publications not listed in SCOPUS or publications after quarter 1 of 2024 have not been captured by the TIM query. TIM also looks into patents from Patstat and the database of projects funded under the Framework Programmes, Horizon 2020 and Horizon Europe of the European Commission.

3. Results

3.1. Memoranda of understanding (MoUs)

In total, five different MoUs were identified (Fig. 1). Among the One Health Agencies, EMA and EFSA hold the largest number of MoUs, each having three MoUs with other One Health Agencies. In the case of EEA, no MoUs have been signed with other One Health Agencies, as EEA has favoured using an 'exchange of letters' or cooperate on issues of common interest on an ad-hoc basis as a mechanism for inter-institutional cooperation.

The five MoUs share common purposes and follow a similar format, including the main topics of common interest and areas of cooperation in accordance with their respective mandates. The MoUs aim to enhance cooperation and coordination, ensure consistency in scientific methods and opinions, avoid duplication of efforts, and optimise the use of resources. Furthermore, they focus on promoting scientific excellence and core values, strengthen the evidence base for risk assessment and monitoring, and facilitate active information exchange and knowledge sharing [13,14].

3.2. Identification of cooperation tools

In total, 13 cooperation tools could be distinguished in the five MoUs (Table 1). Information exchange was identified as the most frequent tool, involving document sharing, consultation on upcoming work, and avoiding scientific divergence, that together with the practise of pre-notification and consultation helps to align scientific outputs and joint work. Also, the establishment of 'joint working groups' is frequently referred to, facilitating coordinated efforts on specific projects or tasks by bringing together experts from different agencies to collaborate, share knowledge, and develop joint reports/opinions. All five MoUs indicate that Agencies assign dedicated staff members as coordinators / contact points, to ensure contact between agencies. Preparedness and foresight, a tool identified in all MoUs, helps to anticipate future challenges and proactively address emerging scientific and regulatory issues.



Fig. 1. Existing Memoranda of Understanding (MoUs) among One Health Agencies, indicating year of signature within the arrows.

Table 1

Cooperation tools mentioned in the MoUs among the One Health agencies.

No	Description of tools
1	Information exchange (document sharing, consultation on upcoming work, e. g. common scientific questions, sharing drafts of annual work and grants & procurements plans and avoiding scientific divergence)
2	Pre-notifications and consultations (before publishing scientific outputs)
3	Events (seminars, study tours, conferences, visits)
4	Staff exchange (guest scientists, fellowships, seconded national experts, trainees, joint recruitment, staff exchange among Agencies)
5	Training (risk assessment courses, cooperation with academic institutions, Better Training for Safer Food training)
6	Grants and Procurements (outsourcing work through common financial instruments)
7	Joint projects (not including joint scientific opinions)
8	Joint working groups (joint mandates & joint outputs, joint scientific guidance)
9	Risk communication (joint press releases, briefings, publications, scientific guidance documents, online communications, communication around scientific opinions)
10	Coordination (assigning coordinators, contact points, governance)
11	Modern technologies (exchange regarding tools IT tools, Artificial Intelligence, modelling)
12	Harmonisation of data formats (sharing and making data accessible)
13	Preparedness (foresight, horizon scanning, emerging risks)

3.3. Literature review

The review identified 66 joint publications, after excluding duplicates and results that do not include at least two of the agencies in the list of authors' affiliations. These publications report on common issues, including: zoonoses, antimicrobial resistance, foodborne-outbreaks and endocrine disruptors. Almost half of these publications were published jointly by ECDC and EFSA. The first joint ECDC – EFSA publication dates to 2010, and the number of publications remained stable over the years following. The topics covered include zoonoses, foodborne diseases, antimicrobial resistance (AMR), and emerging viral threats. Thirteen joint publications were identified among ECHA and EFSA, on issues related to chemical safety assessments, New Approach Methodologies (NAMs), and endocrine disruptors. For other agency pairs, fewer than 10 joint publications were identified. Notably, only six publications involved more than two agencies, almost all related to AMR, and just

one publication included all five One Health agencies.

4. Discussion

This analysis shows that various inter-agency cooperation tools are in place to enhance collaboration, communication, and the coordination of activities across the agencies. These tools are instrumental for agencies to work together effectively, avoiding duplication of efforts, and addressing common scientific topics through the sharing of expertise, information and knowledge. Indeed, EU agencies have actively worked to create synergies, collaboration and over the years established several (scientific) networks. Cooperation tools are crucial to avoid diverging scientific opinions, which undermine citizens trust in science and policy making. The tools support the view of the One Health Theory of Change, which argues that effective implementation of One Health principles relies on the application of the '4 Cs' — communication, collaboration, coordination, and capacity building [15].

The literature review showed that One Health agencies have produced joint publications, which are a tangible outcome of interagency cooperation. The authors acknowledge that the review did not yield a comprehensive overview and does not include so-called grey literature. Scientific publications frequently indicate contributions from agency staff under acknowledgments and do not necessarily include them in the list of authors. It will be useful to identify joint activities also through other means to document the wide range of scientific cooperation among agencies.

Increasingly, in line with their mandates, agencies have shared knowledge and experience on preparedness for health threats. In its resolution on lessons learned from the COVID pandemic the European Parliament recommended that One Health becomes a guiding principle in public health policy initiatives and in pandemic preparedness. Agencies work together on preparedness, for example by involving each other in foresight and horizon scanning exercises to anticipate emerging risks. Most One Health agencies participate in the EREN network that provides a platform to assess newly identified emerging risks and to enhance emerging risk identification methodologies [16]. Regularly, crisis exercises are organised to test preparedness of the different EU Agencies, like the exercise that took place with the Agencies Network providing Scientific Advice (EU-ANSA) [17].

The framework for action outlines strategic objectives and specific actions to implement the One Health approach among the One Health Agencies. These include the development of joint activities, staff exchange opportunities, training and capacity building, the establishment of dedicated joint working groups, as well as enhanced information exchange, communication, and coordination. Not surprisingly, the tools outlined in this paper are similar to the tools indicated in the framework for action, indicating that the One Health cooperation builds on a long-standing scientific cooperation among Agencies. For example, tool n° 8 “Joint Working groups” described in this publication aligns with the action 1.3.b under the first strategic objective of the Joint Framework for Action: “*Work with colleagues to prevent scientific divergences (e.g. aligning approval processes and external consultations; supporting establishment of joint working groups; sharing experts and promoting coordination of scientific networks of respective Agencies)*” [11]. This tool was instrumental among other for the cross-agency work on azole fungicides resistance that was published recently [18].

Importantly, in addition to the cooperation tools and actions, the framework for action indicates a common vision for One Health operationalisation, aiming to *support the establishment of a structured and continuous One Health cooperation across the agencies, in close collaboration with the European Commission and other stakeholders* [11].

The first MoU among agencies dates back to 2010, reflecting the long-standing cooperation among Agencies. Lessons may be learned from the Quadripartite, which signed a joint MoU in 2022, to strengthen their cooperation on One Health activities [19]. Building on the success of the longstanding collaboration among the EU Agencies, additional scientific cooperation mechanisms should be explored to support multi-sectoral approaches and to further the One Health implementation in the EU.

CRedit authorship contribution statement

Stefania Tampach: Writing – review & editing, Writing – original draft, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Ana Vidal:** Writing – review & editing, Conceptualization. **Ian Marnane:** Writing – review & editing. **Wim De Coen:** Writing – review & editing. **Ole Heuer:** Writing – review & editing. **Carlos G. das Neves:** Writing – review & editing. **Kerstin Gross-Helmer:** Writing – review & editing. **Gorgias Garofalakis:** Writing – review & editing, Writing – original draft, Data curation. **Stef Bronzwaer:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Conceptualization.

Disclaimer

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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