



**Links between
COVID-19 related needs of
stakeholders
and One Health EJP
activities**

Workpackage 5

Science to Policy translation

Responsible Partner: BfR, SSI



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LINKS BETWEEN COVID-19 RELATED NEEDS OF STAKEHOLDERS AND ONE HEALTH EJP ACTIVITIES

Introduction and purpose

Response to the recent COVID-19 pandemic imposed itself as an impelling priority shifting many activities of public health organisations from planned tasks to response actions. Given the scale of the pandemic¹ animal health organisations joined forces with public health organisations to contribute to human diagnostic^{2,3}.

As crucial as public health measures and diagnostic is, it is clear that more research is needed to understand and contain the spread of this pandemic, and to prevent future similar ones. Given the zoonotic origin of SARS-CoV-2, the application of a One Health approach is essential^{2,4-6}. Research priorities and knowledge gaps have been summarized by the WHO in R&D Blueprint coordinated Global Research Roadmap⁴, by the OIE in the outcomes of the OIE *ad hoc* Group on COVID-19 and the human-animal interface^{2,7-10}, and by ECDC in their rapid risk assessments¹¹⁻¹³.

The [One Health European Join Programme](#) (One Health EJP) pursues cross-sectoral and international collaboration and research and advocates One Health approach and the “prevent-detect-response” concept. As a landmark partnership between 37 acclaimed food, veterinary and public health laboratories and institutes across Europe, it is in the perfect position to provide a major contribution to COVID-19 response and research. Moreover, as all the partner organisations have mandates from their national ministries or regional authorities, the consortium is in a privileged position when it comes to feeding back its outcomes to national and European risk assessors, risk managers and policy makers.

Emerging threats are a focus of the One Health EJP, and partner organisations [reacted timely](#) to the emergency: public health organisations were at the frontline, and animal health organisations rapidly followed to support large scale human diagnosis. Several projects of the One Health EJP ([METASTAVA](#), [Tele-VIR](#) and [MAD-Vir](#)) focus on viruses, in particular on detection of novel emerging virus threats, and a novel Join Integrative Project (JIP) is being set up on COVID-19.

Given the vast number of European and international research projects currently being initiated on the topic of SARS-CoV-2, the One Health EJP recognises the importance of aligning its activities to European and international guidelines, in particular regarding the soon-to-start new JIP. To minimise the risk of duplication of efforts and maximise added value, alignment of One Health EJP activities to international guidelines is summarised and confirmed by this work.

The table below displays European and international priorities (general recommendations, and specific research needs and knowledge gaps) identified by scanning published documents of ECDC, EFSA, FAO, OIE and WHO, and how they are addressed in activities of the One Health EJP. Given the rapidly evolving situation, the following table reflects the needs of the stakeholders up to the current point in time (20.04.2020)



Stakeholders' identified needs and One Health EJP activities

COVID-19-related priorities, research needs and knowledge gaps identified in documents of European (ECDC, EFSA) and international (FAO, OIE, WHO) stakeholders were scanned and related with activities of the One Health EJP. The entries were selected taking into account the R&D Blueprint coordinated Global Research Roadmap⁴ as well as other international stakeholders (e.g. OIE, EFSA) and are shown so that those emphasized as most immediate needs are mentioned among the first. In addition a section of overarching needs was considered, reflecting the factors indispensable for the success of global research efforts.

	Identified needs	One Health EJP activities addressing the needs
Overarching needs	<p style="text-align: center;">The One Health approach</p> <p>A coordinated multi-disciplinary approach is “imperative” for the response to the current crisis and the prevention of future similar outbreaks⁴. Stakeholders advocate following a One Health approach to guide risk reduction strategies, which should therefore target the human-animal-environment interface^{2,4-6,14}.</p>	The One Health paradigm is at the foundation of the One Health EJP consortium and guides its actions.
	<p style="text-align: center;">Harmonisation</p> <p>If the response actions to the current outbreak are to be successful, a key component is the harmonisation of methods and protocols. In the short run testing protocols have to be harmonised between public health and veterinary services, so that veterinary services can efficiently support diagnostic testing³, in the long run coordinated implementation of critical research can be achieved only using standard protocols⁴.</p>	<p>Given the participation of 19 European countries, and given the strong cross-sectorial prospective of One Health EJP, overarching work on harmonization and alignment of procedures has high potential.</p> <p>Projects of One Health EJP deal with integration and standardization of methods and data across the medical and veterinary sector. In addition all novel methodologies, guidelines and protocols developed by One Health EJP members are shared and harmonized already at an early stage.</p> <p>The novel COVID-19 JIP aims at the development and harmonisation of detection and characterization methods for SARS-CoV-2 in humans, animals, food and feed, and environmental specimens. Methods will be harmonised between countries, given the involvement of several European countries in the project, and sectors, given its multidisciplinary nature.</p>
	<p style="text-align: center;">Transparency</p> <p>Research in general and multidisciplinary research in particular requires sustained and transparent collaboration⁴. When the stakes are so high, this is of the essence.</p>	The One Health EJP is a well-established cross-sectorial and international collaboration between partner institutions. Transparent communication and knowledge sharing are pillar values of the One Health EJP consortium. Clear and timely communication within the consortium and with the stakeholders will be paramount



		when dealing with the new coronavirus. All partners are familiar with drafting DMP, which aims at making research data available (in a FAIR manner) for future work.
	<p style="text-align: center;">Mobilising expertise</p> <p>To mitigate the effect of the pandemic, it is essential to mobilise health workers and other technical workers on a global scale to support capacity and operations^{15,16}. The WHO coordinates international outbreak response using resources from the Global Outbreak Alert and Response Network (GOARN)¹⁷.</p>	Collaboration between the One Health EJP and the GOARN has been established, and a dedicated group has been set up
Priorities	<p style="text-align: center;">Support by veterinary services</p> <p>Veterinary services can relieve the unbearable pressure that public health laboratories are experiencing by supporting diagnostic services^{2,3}.</p>	<p>All One Health EJP beneficiaries have mandate from their ministries. Some of those include veterinary services, and are involved in the response to the pandemic.</p> <p>In several countries represented in the One Health EJP, One Health EJP partners are involved in collaborations where veterinary services support SARS-Cov-2 testing of human samples.</p>
	<p style="text-align: center;">Point-of-care testing</p> <p>Validation of point-of-care testing is needed for quality diagnostics. Comprehensive testing (viral loads, identification and serology) supporting contact tracing will aid establishment of surveillance strategies¹¹.</p>	<p>Partner organisations are working on fast, cost effective on-site diagnostic tests.</p> <p>The TELE-Vir project key aim is to develop a fast point-of-incidence toolbox for identification and characterisation of emerging virus threats.</p>
	<p style="text-align: center;">Screening of animal hosts</p> <p>While <i>Rhinolophus</i> bats appear to be the ancestral hosts of SARS-Cov-2⁴, the animal reservoir and possible intermediate hosts are still unknown. Research needs to consider farmed animals and hunted wildlife as a possible source of spill over^{4,7,14}.</p> <p>Serological (prevalence) screening coupled with molecular methods are needed for a wide range of hosts⁴. Serological study protocols should be harmonised across sectors⁷ and countries¹¹.</p> <p>Broad surveillance sampling is therefore needed, coupled with testing of archived specimens^{7,9}. Negative findings have to be reported as well².</p>	<p>The projects MAD-Vir and TELE-Vir include screening of a large number of diverse samples for fast detection of viral agents.</p> <p>The novel COVID-19 JIP focuses on One Health aspects of the outbreak. Given its pan-European nature, the project ensures rapid sharing of information and best practice for detection in human and animal clinical samples, and aims at the alignment of animal surveillance activities.</p> <p>As eventually the aim is to identify susceptible hosts and to try to find the source of SARS-CoV-2, the project plans to detect and characterise the virus in animal specimens, including wildlife and archived specimens, as well as to perform</p>



	<p>experimental infections of <i>ex vivo</i> respiratory animal tissues, including companion animals.</p>
<p style="text-align: center;">Role of food contamination</p> <p>Presence of the virus on food has been reported, but there is currently no evidence that food contributes to human infection^{6,18}. Given the zoonotic origin of SARS-CoV-2, however, and given that the circulation of food and livestock should be preserved in the EU¹⁹, it is necessary that more evidence is produced. There is not just the need to report if viral RNA is found on/in food products, with particular focus on wildlife meat⁴, but also to carefully assess its potential role in human transmission [EFSA private communication].</p>	<p>One goal of the COVID-19 JIP is the establishment of SARS-CoV-2 detection methods for food and feed specimens, and harmonisation of these between One Health EJP partners. Sampling and concentration methods as well as RNA isolation and RT-PCR methods for food items and feed will be developed in compliance with EU standardization requirements, and shared between partners.</p>
<p style="text-align: center;">Role of environmental contamination</p> <p>The highest risk of COVID-19 spread is through human-to-human transmission, however contamination of surfaces is broadly reported. There is the need of assessing the stability of the virus on different surfaces^{4,7}, and it is necessary to assess the putative role of contaminated surfaces in transmission¹¹.</p>	<p>The COVID-19 JIP will investigate the role of fomite and environment in viral transmission by optimising tests for detection of viral RNA and viable virus, characterising the factors having impact on virus survival and providing robust interpretation.</p>
<p style="text-align: center;">Transmission pathways</p> <p>In addition to the detection of viral particles in animals, food, feed and environment, the dynamics of spread has to be studied. What is the transmission pathway that goes from reservoir, to putative secondary host, to humans, and is a reverse transmission from humans to animals possible^{4,7,11}?</p>	<p>To improve disease surveillance, control, preparedness and intervention, the COVID-19 JIP will generate valuable data on patterns of crossing the species barrier, transmission and disease emergence, including ecological and anthropological factors which determine virus availability and opportunities for exposure and infection. Modelling, building on the analysis of key data, will be used to evaluate to what extent pathogen trajectories and high-risk situations and environments can be predicted. New and comprehensive knowledge on epidemiology will support risk assessment and risk management of COVID-19 pandemics as well as provide a model for prevention and response to future emerging threats.</p>



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