



Report of an international conference

Organised by the Federation of European Academies of Medicine (FEAM) and the InterAcademy Partnership (IAP)
At the National Academy of Medicine, Paris, 23 June 2022

The conference was designed to bring together high-level, global experts to examine how to support the transdisciplinary development of One Health priorities. Experts shared lessons from good practice on One Health preparedness and response together with policy makers, to discuss EU priorities in the global context and explore how the EU can lead global action. Roundtables examined the priorities for tackling zoonoses and antimicrobial resistance, agreeing on the importance of transdisciplinary collaboration across the sciences and with all stakeholders. One issue for resolution concerns the feasibility of ensuring that the evidence base on environmental factors is sufficiently clear to enable its inclusion in the One Health concept without risking a dilution of the focus on human and animal health.

Key messages were developed relating to recommendations on the importance of education in its many dimensions; public engagement; coordination and improved governance across sectors and at all levels; priorities for research and its translation in the development of innovative tools and the prudent and equitable use of novel health products and services.

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Introduction

Professor Patrice Tran Ba Huy (President of French National Academy of Medicine) welcomed participants to the conference organised by FEAM and IAP, together with the French Academies of Medicine, Veterinary Science, Pharmacy and Agriculture. The meeting focuses on issues for One Health (interconnectedness of healthy communities, healthy animals and a healthy environment), exemplified by the current major priorities to tackle zoonoses and antimicrobial resistance (AMR). Responding to these challenges requires transdisciplinary collaboration across the sciences, and with all stakeholders, and the involvement of speakers from across the world underscores the point that pathogens know no geographical barriers. The threats of zoonoses and AMR represent health, economic and social crises. The scientific community has an important role and responsibility to encourage political leaders and institutions such as the Health Emergency Preparedness and Responsiveness Authority (HERA) to act in a coordinated manner to ensure the appropriate EU One Health policies.

Professor Tran Ba Huy, and subsequent speakers, paid tribute to Professor André-Laurent Parodi, a key contributor to the planning of this event and a leading expert in characterising and developing the scope of One Health¹, whose recent death (15 May 2022) is a considerable personal loss felt by many of the participants as well as to the field of study.

Dr André Jestin (President of French Academy of Veterinarians), speaking on behalf of the President of FEAM, observed that other academy members of FEAM were also actively participating, from the Netherlands, UK and Romania, this commitment again reaffirming the inter-academy, inter-sectoral and international nature of the objectives. FEAM's mission is to promote cooperation between the national academies in the WHO European region and to provide them with a platform to formulate and express their common position on European matters concerning human and animal medicine, biomedical research, education, and health. In extending to the European authorities, the advisory role that academies already exercise in their own countries, FEAM can help to integrate discussion and action across health bodies, universities and other stakeholder groups, and with citizens. The One Health approach is a unifying concept that takes account of the changing environment as well as human-animal interfaces: the meeting comprises three roundtables aiming to deliver clear messages to the diverse audiences.

Professor Didier Houssin (President of the COVID-19 Emergency Committee of WHO and former Director-General for Health in France; Member of the French Academy of Medicine) in his keynote lecture on "Reinforcing health security in Europe according to the One Health concept", emphasised the importance of operationalising the concept. Progressive stages in the concept can be characterised as:

- *One medicine – a medical concept* (1984), based on similarities in anatomy, physiology and sensitivity to the physico-chemical environment shared between humans and other animals.
- *An infectious disease risk-centred One Health public health concept* (2008), developed by WHO and other UN agencies, based on microbiological advances, for example understanding of human diseases caused by infectious agents jumping the species barrier.
- *One Health – as a whole public health concept* (2017), an approach to design and implement programmes, policies, legislation and research projects in which multiple sectors communicate and work together to achieve better public health outcomes.

This One Health concept is still being refined but Professor Houssin warned that there may be increasingly inflationary developments in ambitiously extending the scope to the shared health of humans, animals and environment, without sufficient evidence base for understanding the significance of the health of the environment or ecosystem health². From his perspective, current operationalisation of the One Health concept should mainly focus on infectious disease-related public health issues such as zoonotic and pandemic risks; containment of AMR in humans, farm animals and

¹ For example: Editorial, The "One health" concept: reality and future prospect, Bull. Acad. Natl. Med. 2021 205, 659-661.

² Further discussion of how ecosystem health is defined is provided by P. Giraudoux, Bull. Acad. Vet. France 2022, <http://www.academie-veterinairedefrance.org/>.

aquaculture; and reinforcing food safety (for example, the lessons of bovine spongiform encephalopathies - BSE, that had often been previously ignored by policy makers).

Drawing on recent COVID-19 experience, operationalisation requires action at the European level to reinforce health risk assessment and management:

- Strengthening science higher education and transdisciplinary research.
- Increasing cooperation between EFSA, ECDC, EMA and with national health security agencies.
- Reinforcing cooperation between physicians and veterinarians (exemplified by the creation of Cellule de Veille COVID-19 at the National Academy of Medicine in France).
- Increasing coordination, with a broader role for ECDC to support Member States during crisis preparedness and responsiveness.
- Clarifying and strengthening other public health and social measures such as those restricting mobility between Member States in a pandemic.
- Addressing weaknesses in development of medical countermeasures by enabling HERA to develop analogously to BARDA with activities for product initiation and development at scale³.
- Strengthening the mandate for a public health role for all health professionals, for example veterinary practitioners and pharmacists as well as physicians.

However, this operationalisation will remain insufficient if not also implemented worldwide. Zoonotic risks linked to deforestation and animal farming methods, for example, can affect us all. And, to reiterate his previous warning, operationalisation may be at risk from excessive dilution of the One Health concept if incorporation of ill-defined interests relating to “health of the environment” were to render coordination more demanding. Subsequent speakers returned to this point of controversy.

Roundtable on “Zoonoses and environmental factors”

Dr André Jestin in his introduction to the roundtable agreed that tackling the emergence of zoonoses is a key priority for the operationalisation of the One Health concept. He advised that this priority must entail addressing environmental issues as well as human and animal health because drivers of pandemics may include, for example, the increased global mobility of people and goods, increasingly intensive animal husbandry and declining biodiversity. The quadripartite initiative by WHO, OIE, FAO and UNEP is important at the global level and the One Health concept must now be mainstreamed to support sustainable development. It is vital for the new EU research funding initiative Horizon Europe to include the focus on zoonoses with studies on disease emergence and transmission in order to prepare better for the next pandemic. Although coordination between EU bodies to strengthen risk assessment and management is progressing, one lesson from COVID-19 was that the rapid spread of confusing messages served to undermine the cohesion of response measures. How can this be addressed? Contributors to the roundtable were asked to examine these diverse issues.

Dr Stephane de la Rocque (WHO, member of Veterinary Academy of France) noted the importance of international coordination that, in turn, can enable the strengthening of collaboration between sectors at the country level to be better prepared. Internationally, there is now momentum to break down disciplinary and sectoral silos and this includes bridging between human health, animal health and environment authorities and WHO, jointly with FAO and OIE, to implement tools to help countries improving their coordination capacities. Another key point raised that was then addressed throughout the conference is the responsibility to engage with the general public, capitalising on current post-covid interest in One Health.

³ For further recent discussion of HERA, see report of FEAM meeting, <https://www.feam.eu/wp-content/uploads/Workshop-HERA-January-2022-Summary-report-FINAL-17022022.pdf>. FEAM has now been selected as a member of the HERA Civil society Forum <https://www.feam.eu/feam-selected-as-member-of-the-hera-civil-society-forum/>.

Professor Serge Morand (CNRS Montpellier, Thailand; member of the French Academy of Medicine) agreed with the importance of conveying information to the general public and that this activity must include addressing the health of ecosystems as part of protecting and promoting human health. Experience from the South East Asia region on the effects of globalisation, including insights from studying loss of biodiversity, wild animal farming as a source of food and traditional medicines, and the COVID-19 crisis, demonstrates that a well-functioning ecosystem is the basis for all health and underscores a role for local communities in tackling diverse problems, that include tropical diseases and AMR. The One Health approach has to be integrated beyond individual specialities and across sectors worldwide in order to understand interactions in different habitats for disease transmission and thereby facilitate early action. A key role was described for UNESCO (Biosphere Reserves programme) in supporting training, for example to introduce new strategies to promote agriculture, forestry and pastoralism as part of sustainable development.

Professor Branislava Belić (Department of Veterinary Medicine, University of Novi Sad; member of the Serbian Academy of Medical Sciences) described the One Health situation in Serbia where TB, brucellosis, Q fever and leptospirosis are among major diseases. Serbian activity on One Health is aligned with EU strategies. A case study on avian influenza outbreak helped to illustrate continuing challenges for monitoring and control of zoonoses and for policy development in the veterinary and human health care sectors necessary to cover research priorities, surveillance and the strengthening of laboratory capacity. Legislation in other sectors is also highly relevant for One Health, for example the management of water quality. Many of the issues had been accentuated by the COVID-19 pandemic.

Professor Wim van der Poel (Global One Health consortium and Wageningen BioVeterinary Research, Department of Virology; member of the Royal Dutch Academy of Sciences and Arts) reinforced calls for implementing EU strategies as part of operationalising the One Health concept. He also agreed that bringing stakeholders and disciplines (including human and veterinary medicine, environmental and social sciences) together, and building capacity to work together, was essential to tackle One Health priorities such as climate change and biodiversity loss. EU leadership could help to provide university courses to facilitate global sharing of information, including how to make the One Health approach work.

Dr Robin Fears (Senior Scientific Advisor, FEAM) referred to a recent IAP project analysing the multiple pathways for effects of climate change on health in Europe, Africa, Asia and the Americas⁴. There is evidence for expansion in Europe, northwards and westwards, of zoonoses such as West Nile Virus, leishmaniasis and Lyme disease, associated with climate change as one environmental driver. Understanding the geographical origins and extension of zoonoses has implication for EU collaboration on surveillance and management with neighbours in the Balkans and the Mediterranean region. Climate change can affect the distribution of pathogens and their vectors and host-pathogen interactions, including via modification of human behaviour. It is very likely that other zoonoses will emerge in consequence of environmental changes such as in land use and loss of biodiversity as well as resulting from climate action pathways. Climate change is an environmental crisis but it is also a health crisis and there is much more to be done to raise the visibility of health issues in the broader global discussions on climate change. Tackling zoonoses requires better climate adaptation solutions, including better early warning systems, innovative products and services, and more commitment to basic research, for example to understand what drives transmission of infection between species.

Professor J. Armando Barriguete Meléndez (General Director of the Mexican Mission at the UNESCO CONALMEX; Foreign correspondent member of the French Academy of Medicine; SMLH Mexico & Americas), addressed the task of how to do better in communication & Health Education on One Health in Latin America public and health and education workers. The public are interested in One Health but encouraging their action is a demanding challenge. It is realised that medical information does not create impact without “education strategies”, now some are being developed in Mexico, learning from best practices and places (including academies), to convey information on key One Health issues such as the impact of migration.

⁴ IAP report “Health in the climate emergency: a global perspective” https://www.interacademies.org/sites/default/files/2022-05/IAP_CCH_Global_3rd_Proof_Web_complete_no%20crop.pdf.

Visual and written issues were exemplified by the Franco-Mexican model in the context of the Commission 6th at the French Academy of Medicine⁵, from the research *PREZODE*⁶ that compiles evidence on climate change, and with films and books by French directors and writers cited by Prof. Barriguete. The latter are educative tools for public and schools in Mexico emphasising that everybody has a role to play on a daily basis to achieve the shared aims of One Health. A core part of this mutual learning is to seek feedback from a network of schools to understand what they are already doing and how they can be helped. This case study draws on particular links between Mexico and France, but it has wider potential value for other academies and institutions internationally in linking scientific knowledge and its translation to practice, supporting public engagement strategies in Latin America and elsewhere.

Roundtable presentations were followed by general discussion that helped to clarify and amplify a range of issues, including:

- *Education and training initiatives.* Significant progress has been made, for example, in training on One Health in French veterinary schools⁷ but more effort is needed in primary and secondary education, based on working with teachers on their priorities. The Franco-Mexican case study from Mexico is very instructive and has implications for training scientists in communication, reinforcing the association between “Education and Health” and linking Latin America with France.
- *Engaging with the general public in order to influence policy makers.* Engagement with the younger generation remains a challenge and, as noted previously, unsubstantiated extension of the One Health concept to include environmental systems might risk distraction from the focus on health. Academies can do more to support communication initiatives by scientists, including with the Press. Academies of agriculture are currently producing a report that covers environmental health but there is only limited evidence, for example, to link declining biodiversity with COVID-19. “Sustainable” ecosystems might be a more helpful term than “healthy” ecosystems in explaining the relevance to human and animal health.
- *Better coordination of action.* More funding for coordination among scientific disciplines is required but it is also important to capitalise on the opportunities for alliances that are already available. It is also important to consider any One Health implications of other crises, in particular the Ukraine war⁸. As described by previous speakers, coordination is also needed between the mandates of different government departments at the national level and within EU structures for action.

In commenting on the zoonoses roundtable Professor Jean-François Mattei (former French Health Minister, former President of National Academy of Medicine) highlighted the importance of education⁹, new tools (such as disease maps and early warning systems), the need for more financial support for One Health and the value of communicating about success stories such as the work of Vets without Borders in training for early detection of disease. The One Health concept is relatively new, has been operating in a rather dispersed manner and now needs strengthening. This requires further thought on how best to incorporate issues for the health of ecosystems - not just plant health but also the environmental drivers of human and other animal health. Dr André Jestin concluded the roundtable by reaffirming the priorities for accelerating the strategy for One Health: by supporting education at all levels, convening disciplines, promoting governance and tackling resource limitations.

⁵ <https://www.academie-medecine.fr/composition/commissions/>

⁶ <https://prezode.org/The-initiative>

⁷ An additional example for health professionals is provided by the recent initiative on “Moving towards the right to health for all by training the public health and wider health workforce on climate change and health”, recommendations led by ASPHER with endorsement by FEAM for the EU Health Policy Platform, <https://webgate.ec.europa.eu/hpf/>.

⁸ A recent FEAM Forum report on the impact of the war in Ukraine contains discussion of both veterinary medicine and public health, <https://www.feam.eu/wp-content/uploads/Forum-Internal-Meeting-Ukraine-11th-May-2022-Summary-Notes.pdf>.

⁹ See also FEAM involvement in Periscope project (Pan-European Response to the Impacts of COVID-19 and future Pandemics and Epidemics), where FEAM is leading on the Work package on training and education, to include development of MOOCs on One Health, www.feam.eu/policy-priorities-2/periscope-2.

Roundtable on “Tackling antimicrobial resistance”

The chair Professor Vincent Jarlier (Emeritus Professor of Bacteriology-Hygiene, Sorbonne University; member of French Academy of Medicine) started by asking roundtable presenters for their recommendations on AMR.

Dr Dominique L Monnet (Head of Section Antimicrobial Resistance & Healthcare-Associated Infections, ECDC) noted that it was vital to use available antibiotics, including the latest generation, together with best hygiene practices, particularly in hospitals where the AMR burden is greater. New problems continue to arise, for example the emergence of resistance to ceftazidime-avibactam in carbapenem-resistant Enterobacterales in health care settings¹⁰. Information campaigns on the prudent use of antibiotics must continue (for example, European Antibiotic Awareness Day and World Antimicrobial Awareness Week) – these have improved awareness in European populations and are associated with a gradual decline in antibiotic consumption in the EU. One example of a successful education programme is e-Bug, targeting children and teenagers with information on microorganisms (bacteria vs. viruses), types of infections (foodborne, sexually transmitted, etc.), hygiene (starting with hand hygiene), antibiotics and vaccinations. However, initial European Commission funding for this programme has now stopped (funding is currently provided by the UK), which underscores the importance of taking a longer-term view of funding early education programmes in all countries¹¹.

Professor Jean-Christophe Giard (Head of research unit Dynamicure, Inserm U1311, University of Caen; member of the French Academy of Pharmacy) extended the discussion to observe that education was also required for medical students and pharmacists so that they can communicate on AMR to patients. Because AMR is also a concern in animal health, education resources should be pooled for human and veterinary medicine as part of greater integration efforts on One Health that must also involve collaboration between the Ministry of Health and Ministry of Agriculture. Professor Giard also reiterated a point made in the previous roundtable concerning the importance of more commitment to fundamental research.

Professor Alison Holmes (Professor of Infectious Disease and the Director of the NIHR Health Protection Research Unit in Healthcare Associated Infections and AMR and the Centre for Antimicrobial Optimisation, Imperial College London; and University of Liverpool; member of the UK Academy of Medical Sciences) stressed the value of investing in people and career pathways in this field, for both those who are delivering care and those who are doing research.

A recent report from the Academy of Medical Sciences¹², that involved consultation with patients and the public, used the learning from COVID-19 to re-examine the AMR agenda. This report also stressed the need to invest and support careers. Some of the other major points reported were:

- Rapid and point of care diagnostics are important both for clinical decision making and for the surveillance of signals and trends in AMR¹³.
- Vaccines can be part of AMR preparedness, including veterinary use.
- Use of the antibiotics available now must be optimised to enhance and sustain effectiveness, alongside efforts to develop new agents.
- Societal engagement is critical and the involvement of young people can particularly help to raise issues on the political agenda and maintain momentum.
- In addition to supporting the One Health agenda, human health professionals need to work effectively together across primary, secondary and tertiary care, for the long-term and recognising global dimensions.

¹⁰ ECDC Rapid risk Assessment 12 June 2018, <https://www.ecdc.europa.eu/sites/default/files/documents/RRA-Emergence-of-resistance-to%20CAZ-AVI-in-CRE-Enterobacteriaceae.pdf>.

¹¹ See <https://www.e-bug.eu/index.html#France> for a description of other primary and secondary education material (and equivalent sites for many other countries in Europe).

¹² AMS 2022 “Antimicrobial resistance research: learning lessons from the COVID-19 pandemic”.

¹³ Une ressource de surveillance importante est ProMed, le programme de surveillance des maladies émergentes, lancé par la Société internationale pour les maladies infectieuses, qui est le plus grand système accessible au public de notification mondiale des épidémies, <https://promedmail.org>. AMR is covered by ProMed.

Dr Catherine Reynaud (Pfizer) appeared in a video of a pharmaceutical company perspective that agreed with much of the previous presentations. COVID-19 had raised public awareness of the importance of treating infectious disease. Research to find novel antibiotics must continue (recognising that they may be held in reserve once approved) while, at the same time, ensuring that the efficacy of older antibiotics is protected. Building on a long history of interest in AMR, in 2020 multiple pharmaceutical companies formed a new collaboration to tackle AMR and to prepare for new pandemics.

Professor Gian Maria Rossolini (Department of Experimental and Clinical Medicine, University of Florence Piastra dei Servizi Clinical Microbiology and Virology Unit, Florence Careggi University Hospital; member of the Italian Academy of Medicine) presenting a clinician's perspective, discussed the complexity of AMR, where evolution of resistance may be rapid and, in some cases, has no treatment options. Different drivers of AMR include mobile elements in the pathogen, human behaviour, and environmental changes, such that AMR may be difficult to predict. There is presently great concern about the emergence of resistance to novel antibiotics to treat Gram-negative pathogens. It is clear that AMR can proceed differently in different settings, for example in Latin America a high level of resistance in commensal bacteria may arise by transmission from the environment.

Professor Helena Žemličková (Head of the National Reference Laboratory for Antibiotics, National Coordinator of European Antibiotic Resistance Surveillance (EARS-Net), Czech representative for AMR agenda at ECDC) reviewed forthcoming interests of the Czech EU Presidency (from 1 July 2022). Outputs from the One Health AMR subgroup will be presented in September covering issues that include:

- Ensuring licensing and accessibility of old (mainly narrow spectrum) antibiotic products in all Member States. The problem is compounded by a lack of European manufacturers and there may be a particular problem for paediatric indications.
- Overuse and misuse of antibiotics in the community, for example to treat viral respiratory diseases.
- As noted by previous speakers an emphasis that, in the hospital setting, hygiene and infection prevention control programme is particularly important¹⁴.

Irina Magdalena Dumitru (Senior Specialist, Head of Clinic II adults, Clinical Infectious Diseases Hospital, Constanta) presented on the status of AMR surveillance in Romania, drawing on ECDC EARS-Net resources. There are major problems for resistance to Carbapenems especially in *Pseudomonas* and *Acinetobacter* spp and in intensive care (see also Monnet footnote 8). Increasing AMR is associated with increasing consumption of antibiotics especially when poorly managed, for example: when used as treatment of viral infections in outpatients; incorrect prophylaxis in dentistry and elsewhere; self-medication; lack of diagnostics or suboptimal rapid diagnosis; limited antimicrobial stewardship; and suboptimal vaccination. The strategy to combat AMR includes a national programme of monitoring and recommendations to increase AMR training for medical students by various means (such as summer schools and scholarships) to build a network of experts. Continuing training of older family physician is also necessary as is the sharing of examples of good practice in AMR limitation from countries with low AMR. In agreeing with previous speakers, the role of HERA in developing new medical countermeasures may also become important.

In summarising points from the roundtable the chairman Professor Jarlier observed that the pressures for selection of AMR in humans and animals will continue such that more focus should be given to tackle transmission of AMR. This requires attention to environmental factors and procedures, for example separating clean and contaminated water sources and must involve collaboration between disciplines and with experts in sanitation, engineering and urban planning, among others to stop AMR transmission from sewage¹⁵. We know what needs to be done, the challenge is in sharing and applying the knowledge in different settings. Among questions posed in further discussion were:

- *Priorities for treating waste water*. Taking the global perspective on AMR transmission and recognising the inevitable limitations in resources, is it better to focus on funding sanitation in LMICs for benefit worldwide?

¹⁴ It is noteworthy, as mentioned elsewhere in discussion that one in five prescriptions in European hospitals are for infections acquired in hospitals.

¹⁵ See extensive discussion of the environmental issues for AMR in the recent report of the FEAM Forum 2022 "Pharmaceuticals in the environment" <https://www.feam.eu/wp-content/uploads/Pharmaceuticals-in-the-Environment-Summary-report.pdf>.

Can more governance of sanitation initiatives be exercised at local (such as mayoral) level? However, water treatment is costly, can local authorities afford this?

- *Coordinating older and newer surveillance networks.* What are the issues for ensuring data will be both high quality and interoperable? Are we monitoring and mapping in Europe all the most important pathogens and at sufficient level of detail in different settings?
- *Properties of innovative antibiotics.* In filling current therapeutic gaps, what do we need to do to develop antibiotics without a great propensity for AMR? Or if this cannot be engineered, how is the existing reservoir of antibiotics best defended?

In commenting on this AMR roundtable, Professor [Jean-François Mattei](#) summarised interconnected objectives for:

- *Associating* – better usage of antibiotics and associated preventive techniques.
- *Demanding* – prescribing hygiene before prescribing novel agents.
- *Informing* – education programmes at all levels, learning from success and failures.

Roundtable on “How to combat them with a One Health approach”

Chairman Dr [Jean-Philippe Dop](#) (Deputy Director General, World Organisation for Animal Health - OIE) agreed that One Health is an attractive approach but with the challenge to apply globally and transversally. The present event is a good example of collaboration, the global scale is exemplified by the WHO-OIE-FAO-UNEP quadripartite work on One Health. The purpose of this roundtable is to envisage applications of One Health and clarify the drivers and barriers.

Professor [Suad Sulaiman](#) (Health & Environment Advisor; member of the Sudanese National Academy of Sciences) described the challenges for LMICs tackling many infectious diseases at the same time, with limited resources, and other intersecting health crises such as famine. One Health problems and opportunities were exemplified by a case study on ground nuts with high level of aflatoxin from *Aspergillus* contamination, yet often used as a nutrient supplement for children. Better understanding of the food chain and impact of storage on aflatoxin content helps to inform solutions for human health and animal health (because ground nuts are also a feedstuff). However the One Health implications for food and feed safety must also take account of other policy issues. For example, trade objectives encourage less contaminated product batches to be exported with the more contaminated product retained for domestic consumption.

Professor [Yodi Mahendradhata](#) (Vice Dean for Collaboration, Alumni and Community Services, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada; member of the Academy of Sciences of Indonesia) was asked to review the current discussions on One Health taking place as part of Indonesia’s 2022 Presidency of the G20. A recent G20 Health Ministers meeting formulated a One Health policy brief to include issues for: raising awareness, and advocacy; how to situate One Health in pandemic responses; governance for whole of government and society; finance; implementation, including collaboration and resource mobilisation; facilitating knowledge sharing; and monitoring impact. The G20 global brief capitalises both on extensive Asian regional collaboration and Indonesia’s national One Health network. The chairman Dr [Dop](#) observed that G20 discussions will be the basis for a global One Health architecture with support from the World Bank. How should countries like Indonesia and France now act as One Health champions and lead other countries by their example? Professor Mahendradhata noted that Asian countries are showing significant commitment to investing in One Health and are engaged in many consortia and regional platforms to share learning.

In a recorded presentation [Véronique Trillet-Lenoir](#) MEP reviewed the role of EU policies for supporting implementation of One Health objectives for tackling emerging infectious diseases and AMR and for the identification of environmental disturbances that may affect health. Only minor progress has been achieved for the latter and there is much more to be done to understand and deal with the impacts of environmental damage, for example climate change, pollution and loss of biodiversity. This will require increased commitment in many policy areas such as those covering greenhouse gas reduction, revision of REACH legislation (especially for endocrine disruptors) and Farm2Fork with regard to food safety and sustainable food systems. Problems may be complex, for example sustainability

objectives require a reduction in hospital plastic waste but not at the cost of returning to nineteenth century hygiene and care standards. In agreeing with previous speakers, policy implementation of One Health can be seen to rest on three pillars:

- Research – multidisciplinary and with clear identification of priorities.
- Training and education for stakeholders, and all citizens.
- Governance at all levels.

Dr Dop welcomed the inclusion of environmental issues and implementation based on the three pillars. At the global level, it was essential to build capacity for a One Health international community and this could best be done by relying on the existing quadripartite relationship WHO-OIE-FAO-UNEP rather than risking the duplication of resources by unnecessarily creating new structures.

Dr Anne-Claire Amprou (French inter-ministerial delegate for the negotiation of an international agreement on pandemic prevention, preparedness and response) reviewed the early steps in the proposed Treaty to address, in an integrated way, the gaps identified in the response to COVID-19. This Treaty/Agreement, where France has been much involved, is designed to be complementary to, rather than duplicating, existing mechanisms and has involved concerted discussion with stakeholders and civil society. However, in negotiating the international context (and comparing the merits of the different models of Treaty and Agreement) and agreeing national roles, it has to be recognised that countries have different resources at their disposal. Moreover, not all countries may be able to fulfil a Treaty's legal obligations by ensuring ratification by their national parliament.

Providing a policy maker view on One Health, Professor Antoine Tesnière (Director of ParisSanté Campus, French Ministry of Higher Education and Research) again highlighted the importance of learning from COVID-19 and being fully engaged to deal with a major challenge such as AMR – this encompasses both protecting the country's own population and supporting other countries. Initiatives require funding and there needs to be international political commitment to innovative solutions (for example, for food safety). Digital health is part of the necessary innovation for One Health.

Dr Gérard Raymond (President of France Asso Santé) responded to the question of whether One Health is well understood by civil society. Until COVID-19, it had not been widely appreciated how much environmental health had an impact on human health and citizens still do not sufficiently realise how lifestyle is connected with the environment. In order to support citizens to protect and promote their health, there must be improved assessment of environmental impacts on health – and structures to do the assessment. For political initiatives to be successful there must be cultural transformation where One Health becomes a priority in civil society. This requires public education for citizens to reflect on, and adapt to, the changing environment.

Discussion following this third roundtable helped to clarify and expand some of the key points made by the presenters throughout the conference, including:

- *How to ensure sharing of validated information?* Social networks and digital tools can be misused and encouragement for access to information must be accompanied by vigilance regarding quality.
- *How to ensure continuity of political interests?* Continuity between successive Presidencies of EU Council – the French and Czech – is maintained by the mechanism whereby three successive Presidencies act in concert for the longer term. An equivalent model is used by the G20 to look ahead and develop momentum.
- *Global issues for equity.* The inter-ministerial coordination developed for the proposed Treaty/Agreement on pandemic prevention, preparedness and response is a valuable model to adopt for other initiatives but coordination at the international level also requires attention to issues of equity between countries. Discussants raised the potential for science diplomacy and the importance of health professional training to deliver skills in science diplomacy alongside transdisciplinarity and global expertise.
- *Role of academies.* One of the main messages throughout the conference has been the value of partnership between academies, while retaining their autonomy and excellence. Academies can also have an increased role in coordinating between different One Health stakeholder groups, for example in assessing what works

or doesn't. Dr Dop emphasised the point that it is vitally important that knowledge does not remain only the preserve of the scientific community and that the outcomes from today are translated into practice.

Presenting his final comments, Professor Jean-François Mattei expressed optimism about progress on One Health but observed that there are too many different international bodies dealing with similar issues and that, in consequence, it may be difficult to ascertain who is responsible. Greater efficiency for the global operationalisation of One Health also depends on actions that include:

- *Decomartmentalisation* – a theme emphasised throughout the conference but how best to achieve this in different settings?
- *Training and teaching* – another pervasive theme, for example when applied to secondary education to provide the basis for a scientific culture for all citizens.
- *Rebalancing “health” and “care” in health systems* – to generate greater priority for prevention measures but, although this is often discussed, legislators may be difficult to convince.
- *Redefining the university health campus* – where there should be shared training programmes to include, for example, engineers, ecologists and journalists to inculcate the belief of belonging to the same group with shared public health objectives.

Closing the meeting, Professor Stefan Constantinescu (President of FEAM) congratulated all the academies and others present for a great discussion and he reinforced some final messages. Teaching and training to address the present lack of a scientific culture must include both teaching the ability to check the validity of information received and sharing good practice on ways to communicate. Politicians may think they know better and they want immediate solutions, but they need academia. One Health is important for all and must involve many disciplines in focusing on health.

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Combatting zoonoses and addressing AMR on the Planet with a One Health Approach

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Agenda

09:00 – 09:10 **Welcome by the President of the French Veterinary Academy and FEAM Vice President, and of the French Academy of Medicine, Prof. André Jestin and Prof. Patrice Tran Ba Huy**

09:10 – 09:30 **Key note lecture**

Prof. **Didier Houssin**, President of the COVID-19 Committee of WHO and former Director General for Health in France; member of the French Academy of Medicine

09:30 – 15:30 **Round table discussions**

Moderator: Dr. **Olivier Mariotte**, President of nile

Grand témoin: Prof. **Jean-François Mattei**, former French Health Minister; former President of ANM; Professor of Paediatric and Medical Genetics, CHU Marseille; member of the French Academy of Medicine

09:30 – 11:00 **Round table: Zoonoses and Environmental factors**

Chair: Dr. **André Jestin**, FEAM, French Academy of Veterinary Sciences

- Prof. **Serge Morand**, Biologist CIRAD Montpellier, Thailand; French Academy of Medicine
- Prof. **Branislava Belić**, Department of Veterinary Medicine, University of Novi Sad; Serbian Academy of Medical Sciences
- Prof. **Armando Barriguete Meléndez**, Director of Clinica Angeles – Eating Disorders, and Researcher at the Universidad Anahuac, Mexico; Foreign correspondent member of the French Academy of Medicine
- Prof. **Wim van der Poel**, Global One Health consortium and Wageningen BioVeterinary Research, Department of Virology; Royal Dutch Academy of Sciences and Arts
- Dr. **Stephane de la Rocque**, Doctor in Veterinary Medicine – PhD in Parasitology; French Veterinary Academy of France
- Dr. **Robin Fears**, FEAM Sr Scientific Advisor

11:00 – 11:15 **Coffee break**

11:15 – 12:45 **Round Table: Tackling antimicrobial resistance**

Chair: Prof. **Vincent Jarlier**, Emeritus Professor of Bacteriology-Hygiene Sorbonne University Paris; French Academy of Medicine

- Dr. **Dominique L. Monnet**, Head of Section Antimicrobial Resistance & Healthcare-Associated Infections, ECDC
- Prof. **Jean-Christophe Giard**, Head of research unit Dynamicure, Inserm U1311, Université de Caen, Normandie, France ; French Academy of Pharmacy

- Prof. **Alison Holmes**, Professor of Infectious Diseases and the Director of both the NIHR Health Protection Research Unit in Healthcare Associated Infections and AMR and the Centre for Antimicrobial Optimisation (CAMO), at Imperial College London; UK Academy of Medical Sciences
- Prof. **Gian Maria Rossolini**, Department of Experimental and Clinical Medicine, University of Florence Piastra dei Servizi Clinical Microbiology and Virology Unit, Florence Careggi University Hospital; Italian Academy of Medicine
- Prof. **Helena Žemličková**, Head of the National Reference Laboratory for Antibiotics, National Coordinator of European Antibiotic Resistance Surveillance (EARS-Net), Czech representative for AMR agenda at ECDC
- Prof. **Irina Magdalena Dumitru**, Senior Specialist, Head of Clinic II adults, Clinical Infectious Diseases Hospital, Constanta, Romania

12:45 – 14:00 **Sandwich lunch**

14:00 – 16:00 **Round Table: How to combat them with a One Health approach**

Chair: Dr. **Jean-Philippe Dop**, Deputy Director General, Organisation for Animal Health (OIE)

- Dr. **Yodi Mahendradhata**, Vice Dean for Collaboration, Alumni and Community Service, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada; Academy of Sciences of Indonesia
- Prof. **Suad Sulaiman**, Health & Environment Advisor, Sudanese National Academy of Sciences (SNAS)
- Dr. **Anne-Claire Amprou**, French inter-ministerial delegate for the negotiation of an international agreement on pandemic prevention, preparedness and response
- Prof. **Antoine Tesnière**, Director of ParisSanté Campus, French Ministry of Higher Education and Research
- Dr. **Gérard Raymond**, President of France Asso Santé
- Prof. **Véronique Trillet-Lenoir**, MEP (filmed intervention)

16:00 – 16:15 **Conclusions and next steps**

Dr. **Olivier Mariotte** and Prof. **Stefan Constantinescu**, President of FEAM

Federation of European Academies of Medicine (FEAM)

FEAM is the European platform of National Academies of Medicine, Pharmacy and Veterinary Sciences, or National Academies via their medical section. It represents 23 national academies within the WHO European region. FEAM's mission is to promote cooperation between them; offer them a platform to formulate and express their common position on European issues concerning human and animal medicine, biomedical research, education and health; and to extend to European authorities the advisory role they play in their own countries on these issues.

FEAM | 13 rue d'Egmont B-1000 Brussels | www.feam.eu

French Academy of Medicine

The mission of the National Academy of Medicine is to respond to government requests on any question concerning public health and to take care of all research objects that can contribute to the progress of the art of healing.

French Academy of Medicine | 16 rue Bonaparte F-75006 Paris | www.academie-medecine.fr

French Academy of Pharmacy

The National Academy of Pharmacy is interested in all areas of medicine, health products, biology, public health and environmental health: teaching, research, chemistry, pharmacology, toxicology, biology, industry, hospital pharmacy, pharmacy, administration, army, but also hygiene, environment, health security, public health, in all their scientific, technical, legal, societal and ethical aspects. It elaborates reports and issues opinions and recommendations intended primarily for public authorities and health professionals.

French Academy of Pharmacy | 4 avenue de l'Observatoire F-75006 Paris | www.acadpharm.org

French Veterinary Academy

The mission of the French Veterinary Academy is to study all subjects relating to the scientific, technical, legal, historical and ethical fields in which the skills of the veterinarian are exercised, in particular those relating to animals, their diseases, their relations with man and the environment, animal production and veterinary public health; to contribute to the dissemination of scientific progress and the improvement of techniques relating to veterinary activities; to advise the public authorities and enlighten public opinion in the aforementioned areas; and to develop technical and scientific relations, national or international, between veterinarians and other players in life sciences and health.

French Veterinary Academy | 34 rue Bréguet F-75011 Paris | www.academie-veterinaire-defrance.org

French Academy of Agriculture

The French Academy of Agriculture, a "learned society" in the fields of agriculture, food and the environment, has the mission of reflecting on progress; explaining the technical, economic, social and environmental issues; and enlightening society and decision-makers.

French Academy of Agriculture | 18 rue de Bellechasse F-75007 Paris | www.academie-agriculture.fr

UK Academy of Medical Sciences

The UK Academy of Medical Sciences pursues an interdisciplinary approach to policy. It brings together the biological, physical, engineering and social sciences to explore opportunities for innovation and find ways to circumvent barriers to progress.

Academy of Medical Sciences | 41 Portland Place UK-W1B 1QH London | www.acmedsci.ac.uk

Royal Netherlands Academy of Arts and Sciences

The Royal Netherlands Academy of Arts and Sciences was founded in 1808 as an advisory body to the Dutch government – a role it continues to play today. The Academy derives its authority from the quality of its members, who represent the full spectrum of scientific and scholarly endeavors and are selected on the basis of their achievements. It is also responsible for seventeen internationally renowned institutes whose research and collections place them at the forefront of Dutch science and scholarship.

Royal Netherlands Academy of Arts and Sciences | Het Trippenhuis, 29 Kloveniersburgwal NL-1011 JV Amsterdam | www.knaw.nl

Romanian Academy of Medical Sciences

Founded in 1935, the Romanian Academy of Medical Sciences was closed in 1948 by the communist regime and re-established under Law 264/2004 adopted by the bicameral Parliament and promulgated by presidential decree. Since its foundation, the institution has contributed to the development and progress in the field of Romanian medicine. For eight decades, the Academy has been a body of academic excellence, training, and promotion of personalities of high scientific level. The main activities carried out by the Academy are health policy, medical research, medical ethics and medical education.

Academy of Medical Sciences of Romania | B-dul I. C. Bratianu 1 RO- Sector 3, Bucharest | www.adsm.ro