

One Life

INFECTIOUS DISEASES, FROM EMERGENCE TO PANDEMICS: IMPROVING UNDERSTANDING AND GETTING PREPARED

Summary

The SARS-CoV-2 pandemic has clearly shown how public and animal health, the environment, food supply chains and consumption patterns are closely linked. In this perspective, the early detection of health threats is of primary importance to prevent them from assuming pandemic proportions. This is the role of EFSA and ECDC: to provide risk assessments and scientific assistance in the investigation of disease outbreaks, early identification and prevention of disease outbreaks and their evolution to pandemics, and to rapidly communicate to the general public about the risk posed by biological and chemical threats and related uncertainty. We will explore the extent to which the current EU One Health framework can efficiently identify, prevent and control public and animal health threats and the related risk of scaling up to pandemics. Moreover, we will provide recommendations for sustainable and healthy agro-ecosystems. Expected outcomes are new insights on strategies to follow, data to collect, methodologies and techniques to apply for improved monitoring capabilities and increased preparedness to prevent future epidemics.

Vision

The vision of this session is to contribute to shaping and maintaining sustainable agro-ecosystems and healthy communities by a One Health approach, in line with the European Green Deal. At the heart of the European Green Deal, the Farm to Fork Strategy aims to make food systems fair, healthy and environmentally-friendly. With this in mind, a special focus will be placed on the identification, prevention and control of public and animal health diseases and how they could scale up to become pandemics.

Background – Challenges and opportunities

Pandemics represent the tip of the iceberg of systemic imbalances. The COVID-19 pandemic has made us acutely aware of the interrelation between human and animal health, ecosystems, supply chains, consumption patterns and planetary boundaries. Climate change and the increasing recurrence of droughts, floods, forest fires and the emergence of new pests are predominantly human-driven events, which may derive from imbalanced food systems that we created. We need to do much

more to keep ourselves and the planet healthy and to make food systems more sustainable and resilient (EC, 2020). To identify drivers that may trigger pandemics, we should therefore focus on what happens during 'peace time', and not only in very short 'war time' windows (i.e. during pandemics), and we should identify opportunities to improve the sustainability of our food production systems. With this perspective in mind of identifying opportunities to increase the sustainability of food production systems according to a One Health approach, early detection of emerging health threats is of primary importance to prevent emergencies from taking on pandemic proportions and to optimize control measures. For that purpose, Regulation (EC) 178/2002 requires the European Food Safety Authority (EFSA) to establish monitoring procedures to screen and analyse information with a view to identifying emerging risks in the fields within its mission. The final aim of the process for identifying emerging risks is to anticipate and possibly prevent public health challenges, thus contributing to preparedness. The process of identifying/characterising emerging risks involves Member States competent authorities, the European Commission, sister EU agencies (European Centre for Disease Prevention and Control - ECDC, European Environment Agency - EEA, Europol) and stakeholders. For events involving direct or indirect risks to public health from food and feed, the Commission Implementing Decision (EU) 2019/300 on a general plan for food/feed crisis management strengthens the structures and procedures for crisis preparedness. In particular, the Decision designates crisis coordinators at EU Member State level, promotes the use of information systems for alerts, defines a number of supporting actions by the Commission and European Agencies, and assigns the role of communication and general coordination of Member States in this area to the Commission.

In this context, EFSA and ECDC provide scientific assistance in the investigation of disease outbreaks that may cross national borders. This assessment relies on the data shared by public health, veterinary and food safety authorities via the alert systems and results in the production of technical reports such as joint outbreak assessments, joint scientific opinions, etc. The overall aim of the risk assessment is to provide tools for the early recognition and prevention of disease outbreaks and their evolution to pandemics, and to rapidly communicate to the general public about the risks posed by biological and chemical threats and the related uncertainty.

Overall objectives

To ensure that the EU One Health framework in place can efficiently:

- Identify, prevent and control public and animal health threats.
- Identify and address the risk of pandemics occurring.

- Provide insights for sustainable and healthy agro-ecosystems that would contribute both to reducing the public and animal health risks and protecting the environment.

Specific objectives

- To improve the process of identifying drivers for the emergence of diseases and their spread intrinsic to the increased vulnerability of unsustainable food production systems.
- To strengthen the One Health framework in terms of early detection of infectious diseases and intervention, to prevent the evolution of disease outbreaks to pandemics through:
Coordination of activities with a multidisciplinary approach and via international teams;
 - Management of decision-making processes accounting for uncertainties;
 - Generation, sharing and integration of real-time data and methodologies in the spirit of transparency and collaboration.
- Effective digital communication by providing timely evidence-based assessments about disease outbreaks and pandemics and the associated uncertainties;
- Validation of the One Health framework and verification of its effectiveness to protect public health.

People behind the session

Session Coordinator: Alessandro Broglia (EFSA)

Chairpersons: Franck Berthe, World Bank

Moderators: Franck Berthe, World Bank

Rapporteurs: Bernard Bottex, European Food Safety Authority (EFSA); Alessandro Broglia, European Food Safety Authority (EFSA); Jose Cortinas Abrahantes, European Food Safety Authority (EFSA); Ermolaos Ververis, European Food Safety Authority (EFSA)

Organiser

Co-organisers

ONE Life – Session affiliate profiles

INFECTIOUS DISEASES, FROM EMERGENCE TO PANDEMICS: IMPROVING UNDERSTANDING AND GETTING PREPARED

Carlos Goncalo Das Neves, Norwegian Veterinary Institute (NVI)

Chairperson and moderator

Carlos Goncalo Das Neves graduated in Veterinary Medicine (DVM), in 2004 in Portugal, and obtained a PhD in veterinary science, specialty virology in wildlife in 2009 in Norway. He obtained in 2013 the diploma of specialist of the European College of Zoological Medicine (ECZM) in the area of Wildlife Population Health (WPH) and currently Chair that specialty. He is currently the Director of Research and Internationalization at the Norwegian Veterinary Institute (NVI) in Oslo, responsible for coordination of research staff of more than 150 researchers, and have more than 30 publications in peer-reviews journals and books and more than 100 participations in scientific and policy meetings. He holds a joint position as Full Professor at the Faculty of Medical Sciences at the University of Tromsø, Norway.

Carlos has developed his scientific research in the field of virology in wildlife species and accumulated over these years extensive experience on the One Health and sustainable development topics, also with a focus on LMICs. He has a strong background in science to policy translation, advocacy and societal awareness, and he is currently coordinating the establishment of the Norwegian One Health National Platform. He is a member of the IUCN Species Survival Commission - Wildlife Health Specialist Group, and served between 2019 and 2021 as the President of the Wildlife Disease Association. He is also a Commissioner at the Lancet ONE HEALTH Commission, and a member of the Global 1 Health Network.

Ermolaos Ververis, European Food Safety Authority (EFSA)

Rapporteur

Ermolaos Ververis is a Chemist specialized in Biochemistry, Biotechnology and Food, obtaining his BSc and 1st MSc at the Aristotle University of Thessaloniki (Greece). Through a joint Erasmus Mundus MSc degree on Animal-derived Foods, as well as participation in various research projects, he has obtained experience in the food research & development and food safety sectors, within Europe and overseas (The Netherlands, Denmark, Finland, New Zealand, Italy). Since 2016, he has joined the European Food Safety Authority (EFSA), working on the risk assessment of novel

foods in the Nutrition and Food Innovation Unit. Under his current role as a scientific officer, he focuses on the safety evaluation of insects, algae, and products thereof, as well as on food industry by-products, as novel foods. He has been appointed as a reference point in the EFSA novel food Team regarding matters pertinent to food product characterisation and food processing. At EFSA, he has also provided support in mandates in the area of human nutrition. For his PhD studies at the School of Medicine of the National and Kapodistrian University of Athens he currently investigates, through the development and implementation of Risk-Benefit Assessment methods, how the substitution of red meat by other traditional or alternative protein sources may impact public health.

Bernard Bottex, European Food Safety Authority (EFSA)

Rapporteur

Bernard Bottex is a Senior Scientific Officer coordinating Horizon Scanning in EFSA. Having an academic background in agronomy and plant protection, he joined EFSA 15 years ago and coordinated various working groups of the Scientific Committee, contributing to the development of assessment methodologies (e.g. introduction of the use of the benchmark dose approach in risk assessment). Furthermore, he is a Crisis Coordinator ensuring appropriate EFSA response in case of an urgent request for assistance from DG SANTE and the European Member States. In September 2020, Mr. Bottex became Leader of the Emerging Risks Team, undertaking responsibilities on EFSA's emerging risks identification and analysis activities. Since the beginning of 2022, he has been appointed as Team Leader in the Knowledge, Innovation and Partnership Management (KNOW) Unit to coordinate wider environmental scan activities and implement EFSA's innovation and transformation agenda. Among his priorities is to set up a system based on partnership for the early identification of issues implicating food or feed safety with relevance for EFSA.

Alessandro Broglia, European Food Safety Authority (EFSA)

Rapporteur

Alessandro Broglia graduated in veterinary medicine at the University of Milan (Italy) in 2000. At the beginning of his career, he worked as a scientific consultant at the Institute of Animal Pathology (University of Milan), dealing with epidemiology of wildlife parasites. He obtained a PhD in parasitology at the Institute of Parasitology and International Animal Health at the Free University Berlin (Germany), with a focus on diagnostic tests for trematodes. He spent 5 years in Africa working as project manager and veterinary consultant in international cooperation projects. After this,

Alessandro joined the Federal Institute for Risk Assessment (Berlin, Germany) as a veterinary scientist with a focus on molecular epidemiology of parasites. He has been working at EFSA as a scientific officer since 2009, first on biological hazards and since 2016 on animal health and welfare. The topic of his current work is the risk assessment of infectious animal diseases, the transmission dynamics of transboundary diseases, and the evaluation of their prevention by control measures.

Angus Cameron, Ausvet Europe

Panellist

Angus is Director General of Ausvet Europe, a One Health epidemiology consulting company, based in Lyon, France, and part of the Ausvet group based in Australia. Angus is an epidemiologist with special interest in the areas of surveillance and health information systems, livestock identification and traceability, epidemiological data analysis and geographical information systems. He works across of a range of species, including human health, livestock and aquatic animals, as well as plants in over 50 countries. Ausvet Europe's current projects involve working on Avian Influenza modelling and risk analysis, analysis, reporting and risk modelling of antimicrobial resistance, and supporting a long term epidemiological study in domestic animals. Ausvet is also leading a component of a major project to mitigate the risks of AMR, zoonoses and transboundary animal diseases in Indonesia and Vietnam, through the development of data-driven tools. The project includes research into market-driven sustainability for One Health interventions.

Title of talk: General recommendations on safety assessment of innovative products and technology

Abstract of talk:

Availability of safe food, access to safe food, utilization of safe food and stability of availability, access and utilization over time are at the core of food security. As defined by the Food and Agriculture organization of the United Nations (FAO), food security is when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preference for an active and health life. With a world population of 7.9 billion people growing at a rate of 1% per year and more than two billion people experiencing food insecurity, means that there is still much to do to meet this sustainable goal. The global marketplace is responding with the innovation by reimagining traditional food sources as well as emerging and novel food products such as fermented foods, insect and plant derived protein sources, and laboratory developed foods to support

variety and volume capacity needs. However, these applications need to receive a bill of safety, prior to being admitted into the marketplace, both in the way they are designed and produced. Food regulators are therefore looking into various approaches of risk assessment to review innovative products and processes, supporting the availability of new sources of proteins and other nutrients, which would also benefit from added consultation and collaborative action, to avoid the emergence of new trade barriers.

This presentation will review current practices in the regulatory management of novel foods and novel ingredients, including the availability of scientific information, the development and updates of risk assessment methodologies and the consideration of additional parameters that condition decision-making for risk management, such as sustainability of methods of production. It will attempt to discuss options to address the unequal ability of food regulators in developing countries to support the availability of novel ingredients and food production processes.

Anna Okello, Australian Centre for International Agricultural Research (ACIAR)
Speaker

Dr Anna Okello is the Research Program Manager for Livestock Systems at the Australian Centre for International Agricultural Research, a statutory authority within the Australian government's foreign aid portfolio. ACIAR's Livestock Program brokers research partnerships to develop more productive, profitable and sustainable global livestock health and production systems for the benefit of humans, animals and the environment. Anna is also an academic fellow at the University of Edinburgh Medical School, a Senior Editor for the CABI One Health Initiative and a Lancet Commissioner for One Health.

Anna has almost 20 years' experience in international livestock development and veterinary public health, holding technical advisory and research roles in International Non-Government Organizations, the University of Edinburgh, the World Health Organization and the Australian Government.

Originally trained as a veterinarian, Anna has a PhD in political science from the University of Edinburgh's Centre for African Studies and maintains a strong research interest in policy approaches to food systems and food safety in the Indo-Pacific region.

Title of talk: How sustainable farming systems and more resilient food systems can prevent infectious diseases under One Health

Organiser

Co-organisers

Abstract of talk:

Our global agri-food systems are a key interface between humans, animals and the environment. Ensuring sustainable and resilient food production can result in multiple 'wins' under One Health, for example infectious disease reduction in humans, animals and plants, improved animal welfare and human livelihoods, better management of the environmental impacts of land-use change and reduced greenhouse gas emissions intensities. Sustainable food systems can also contribute to sustainable diets through the increased availability and desirability of fresh, nutritious foods for global consumers, whilst simultaneously reducing food waste through spoilage and disease. Furthermore, traditional and informal food systems found across the world play a vital role in the social and economic fabric of thousands of communities, thus providing an important socioeconomic role beyond food security.

Food safety is an integral component of food security; there are a multitude of secondary societal and development effects of poor food safety. In 2015, the World Health Organization's Food-borne Disease Burden Epidemiology Reference Group (FERG) demonstrated that the global burden of Food-Borne Disease was comparable to that of HIV/AIDS, malaria and tuberculosis, at 33 million Disability Adjusted Life Years (Havelaar et al 2015). The World Bank recently estimated that the economic cost of food-borne disease to be more than 100 billion United States Dollars a year in Low-Middle Income Countries (Jaffee et al 2019); nearly all of which was due to the loss of income. There are also a multitude of secondary societal impacts of poor food safety, such as the impact of childhood diarrhoea on key Sustainable Development outcomes such as education and nutrition.

Specifically in terms of infectious food-borne disease, there are a multitude of ways that taking a 'food systems perspective' can help us both learn from past experiences, and be better prepared for future disease emergence; this presentation will discuss some of these lessons and suggest potential solutions.

Geert Molenberghs, Universiteit Hasselt & KU Leuven

Speaker

Geert Molenberghs (1965) is full professor of biostatistics at Hasselt University and KU Leuven. He has been working on longitudinal and incomplete data methods. He was Editor of several journals (Applied Statistics, Biometrics, Biostatistics) and is currently the Executive Editor of Biometrics. He was President of the International Biometric Society (2004-2005). He was elected Fellow of the American Statistical Association and received the Guy Medal in Bronze from the Royal Statistical Society. He has held visiting positions at the Harvard School of Public Health (Boston, MA).

He is founding director of the Center for Statistics at Hasselt University and currently the director of the Interuniversity Institute for Biostatistics and statistical Bioinformatics. He has collaborated with Koen Matthijs on various projects on historic demography, many in the context of interuniversity and international grants. More recently, he has joined Koen Matthijs in the longitudinal analysis of wellbeing data in pandemic times.

Title of talk: How sustainable farming systems and more resilient food systems can prevent infectious diseases under One Health

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**Paolo Calistri , Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise
"G. Caporale"**

Speaker

Paolo Calistri has worked since 1995 at the Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise "G. Caporale" (IZSAM) in Italy, as Head of the Veterinary Epidemiology and Risk Assessment Unit of the National Reference Centre for Veterinary Epidemiology. In July 2015 he became a member of EFSA's Animal Health and Animal Welfare Panel. He became a Member of the International Society for Infectious Diseases (ISID) Council in April 2018. Paolo has also served as responsible for the FAO Reference Centre for Veterinary Epidemiology since September 2018 and as a Member of the Editorial Board of Microorganisms journal since January 2020. Since March 2021, he has been responsible for the OIE Collaborating Centre for Epidemiology, modelling and surveillance. He has also been involved in many international activities as a risk analysis expert, and in several international projects and initiatives focused on the prevention and control of animal health diseases and zoonoses. He has published more than 100 papers (h-index: 23).

Title of talk: Tools for and experiences gained with SARS-CoV-2 monitoring and prevention

Abstract of talk:

Tools for and experience gained with SARS-CoV-2 monitoring and prevention. In February 2020, Italy was one of the first countries in the EU to experience the spread of SARS-CoV-2 and to decide on a national lockdown. All the technical and scientific resources available in the country were immediately mobilised, including the public veterinary research and diagnostic institutes (Istituti Zooprofilattici Sperimentali – IZS), belonging to the National Health System, together with the Italian Veterinary Services. The IZS's resources were quickly redirected to support the public health services in the diagnosis of COVID-19 cases. On 13 March 2020, the IZS of Abruzzo and Molise (IZSAM) was appointed by the Ministry of Health to perform official tests on human naso-pharyngeal swabs for the local health units of Abruzzo (a region in Central Italy with about 1.3 million residents). During a two-year period, more than 650 000 samples were tested. However, given the presence within the IZSAM of the National Reference Centre for Veterinary Epidemiology, Programming, Information and Risk Analysis, the National Reference Centre for Whole Genome Sequencing of microbial pathogens and other national and international centres of excellence, the support that the IZSAM provided to the public

health sector covered much more than just diagnostic services. The IZSAM was involved in the design and implementation of surveillance plans in schools, health communities and industrial plants, in performing epidemiological studies on COVID-19 outbreaks and hotspots and in conducting research activities for the development of new and innovative diagnostic methods. It was also involved in developing web-based dashboards for analysing the COVID-19 epidemiological situation and in designing and managing the genomic surveillance of SARS-CoV-2 variants circulating in the region, which resulted in more than 8 000 sequences. This engaging and immersing 'One Health' experience caused health services in the Abruzzo region to adopt a new way of working, which is now applied to several other areas of health, such as the control and prevention of nosocomial infections due to antimicrobial resistance bacteria, the surveillance of arboviral diseases and the use of metagenomics for rapid diagnosis of viral human meningitis.

Ilaria Capua, One Health Center of Excellence at the University of Florida

Panellist

Ilaria Capua is full professor and Director of the One Health Center of Excellence at the University of Florida where she developed the vision of Circular Health, a natural expansion of the One Health concept.

A veterinary doctor by training, she spent most of her career as a virologist leading diagnostic and research laboratories of international status before serving as a Member of the Italian Parliament (2013-2016).

She has authored over 230 publications in peer reviewed journals, has published scientific books on Avian Influenza and Newcastle disease and ten books for the general public, as well as many columns for Italian newspapers. She is active in the field of science communication and in promoting female leadership in the scientific arena. She dedicated most of her professional life to viral infections of animals that can be transmitted to humans and that cause poverty and food security issues. In 2006, at the peak of the H5N1 bird flu panzootic, she provided global leadership by igniting an international debate on the transdisciplinary sharing of influenza virus genetic sequences to improve pandemic preparedness.

She received several awards including the Penn Vet World Leadership in Animal Health Award (2011), the Gordon Memorial Medal (2012), ESCMID Excellence Award for Clinical Microbiology and Infectious diseases (2104), the Hypathia prize from the European Academy of Sciences (2021).

Dirk Pfeiffer, City University of Hong Kong and Royal Veterinary College, London

Speaker

Dirk Pfeiffer graduated in Veterinary Medicine at the Justus-Liebig University, Giessen, Germany in 1984. This was followed by postgraduate research towards a Dr.med.vet degree at the same university. After that, he obtained a PhD from Massey University, New Zealand, in 1994, and worked there as an academic for 9 years. Since 1999, he has held the Chair in Veterinary Epidemiology at the Royal Veterinary College (RVC), London, UK. Since September 2014, he has been Adjunct Professor at China Animal Health and Epidemiology Centre, Qingdao, China. From June 2015 to May 2017, Dirk held the role of Chief Epidemiologist at UK Government's Animal & Plant Health Agency, Weybridge, UK, as a 20% secondment from RVC. In 2016, Dirk joined City University of Hong Kong as Chow Tak Fung Chair Professor of One Health, while still maintaining a 20% appointment at RVC. He has been involved in epidemiological research since 1985 working in many developing as well as developed countries around the world. Dirk has worked extensively at the science-policy interface through advisory roles for the EU, the FAO, OIE and a wide range of national governments. He has also served as a member of EFSA's Animal Health and Welfare from 2003 to 2009.

Title of talk: A Global Perspective on Eco-Social System Dynamics, Food System Evolution and Pandemic Risk Governance

Abstract of talk:

As a consequence of the interconnected effects of globalisation, economic development, environmental change and modern society's changing lifestyle, we are now experiencing very rapid change in eco-social systems at a global scale. This has also led to the emergence of highly complex risk environments. Food production is an example of this development, which has resulted in the global emergence of infectious diseases with major societal impact, such as avian influenza, African swine fever and COVID-19. Such events will continue to occur and with potentially even more dramatic consequences. It will therefore be necessary to implement much more effective risk governance that includes technical components for preparation, prevention, detection, response and recovery. The COVID-19 pandemic has been primarily about national-level responses and its effectiveness has been extremely heterogenous in time and space within and between countries and regions. To better prevent future pandemics, both prevention and detection need to be significantly enhanced and should be based on a global One Health approach. To achieve this, a better understanding of the drivers of emergence across the complex interaction between eco-social dynamics and food system evolution has to be developed that recognises the global diversity of interfaces between wildlife,

domestic animals and humans. This will have to involve the use and adaptation of existing tools, as well as the development of new tools, approaches and partnerships. It is also important to shift away from a single pathogen focus, thereby taking account of the generic potential for pathogen spillover and amplification within and between these eco-social systems. Much more effective communication and collaboration amongst different types of stakeholders will be essential, including food producers, food processors, consumers and policymakers, within and across national political boundaries. International organisations such as the Food and Agriculture Organization of the United Nations (FAO), the World Health Organisation (WHO), the World Organisation for Animal Health (OIE) and the United Nations Environment Programme (UNEP) need to be enabled to facilitate or even lead this process.

Jose Cortinas Abrahantes, European Food Safety Authority (EFSA)

Rapporteur

Jose Cortinas Abrahantes studied Mathematics at the University of Havana where he graduated in 1992. In the same year, he started working at the Plant Protection Research Institute as head of the biostatistical unit involved in the development of pest and disease preventive and control methods, as well as statistical analysis and models describing the pest spread. In 1998, he got a fellowship from A.B.O.S. for a Master program in Biostatistics at the Centre for Statistics, Limburg's University Centrum, Belgium, and in 2000 got a PhD student scholarship BOF, at the same University, which was later a FWO Grant. Since 2000, he was involved in teaching, consultancy and performing research in the field of biostatistics, developing methods to deal with multivariate frailty as well as methods to evaluate surrogacy and in the context of infectious diseases, getting a PhD in Biostatistics in 2004. From that year he was responsible for the Regression course and co-teaching a course on Disease mapping in the Biostatistics master program, working as well in research and consultancy. In 2010, Jose joined EFSA in the Assessment and Methodological Support Unit, where he has contributed to over 100 publications in different areas, such as: the design of surveillance systems, statistical models in general, benchmark dose modelling including the development of a Bayesian model averaging framework, infectious disease models in the context of Animal health, and as well using machine learning methods for risk assessment purposes.

Franck Berthe, World Bank

Panellist

Dr. Franck Berthe is a One Health practitioner at the World Bank, working on public health issues across the agriculture, environment, water and public health sectors. Franck provides advice and technical assistance to a broad portfolio of investments reducing risks at the human, animal and ecosystem interfaces in various countries and regions. Before joining the Bank, he was the Head of the Animal Health and Welfare Unit at the European Food Safety Authority (EFSA; 2007-2016), Canada Research Chair and Associate Professor at the Atlantic Veterinary College (AVC-UPEI; 2004-2007) and lead scientist at the French research institute for oceans (Ifremer; 1995-2007). He has served as an expert for the World Organisation for Animal Health (OIE) from 1996 to 2020 on various specialized Commissions and ad hoc groups. He was a lead author of the Bank's One Health Operational Framework (2018) and contributed to a number of other Bank's global analytical pieces on health security (from panic and neglect to investing in health security), food safety (the safe food imperative), and antimicrobial resistance (pulling together to beat superbugs). He is a member of the Lancet One Health Commission. A native of France, Franck has a Doctorate in Veterinary Medicine (DVM), a PhD in molecular biology, and a Pasteur Institute diploma in bacteriology.

Aleksandra Kazmierczak, European Environment Agency (EEA)

Speaker

Dr. Aleksandra Kazmierczak is an expert in climate change and human health at the European Environment Agency (EEA). She coordinates the European Climate and Health Observatory - a partnership between the European Commission, the European Environment Agency (EEA), and several other organisations (including EFSA). Aleksandra is also working on environmental health inequalities in relation to air quality, access to green space, exposure to climate change hazards, and social justice in adaptation responses. She has a long experience in urban and social aspects of adaptation to climate change. Before joining EEA in 2017, Aleksandra carried out research in the fields of human geography and spatial planning at University of Manchester and Cardiff University, UK, focusing on assessing social vulnerability to climate change and the role of green infrastructure for human health and well-being.

Title of talk: Impact of climate change on the presence and geographical distribution of infectious diseases

Abstract of talk:

Organiser

Co-organisers

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Impact of climate change on the presence and geographical distribution of infectious diseases. Climate and weather conditions influence the survival and reproduction rates of infectious disease vectors. Climatic and meteorological factors affect the habitat suitability, the intensity and temporal pattern of vector activity throughout the year, and the rates of development, survival and reproduction of pathogens within vectors. The spread and transmission of vector-borne diseases in Europe are already affected by climate change. For example, mosquito populations are moving further north in Europe carrying pathogens to places where they were not occurring in the past, and milder winters result in increased winter activity of the vector tick *Ixodes Ricinus*; mild winters, high temperatures in spring and early summer, rainfall causing flooding in the summer can contribute to an increased spread of the West Nile Virus. As a result, Europe is becoming a hot spot for emerging infectious diseases.

This presentation discusses the trends and projections of the climate suitability for vectors of infectious diseases and disease transmission in Europe. The planned and currently implemented solutions in monitoring and addressing the occurrence of vectors and transmission of diseases will also be discussed, drawing on the contents of the European Climate and Health Observatory.

The European Climate and Health Observatory is a partnership between the European Commission, the European Environment Agency, the European Food Safety Authority, European Centre for Disease Prevention and Control, Copernicus Programme, World Health Organization Regional Office for Europe and Lancet Countdown in Europe. It aims to support Europe in preparing for and adapting to the impacts of climate change on human health by providing access to relevant information and tools. It also fosters information exchange and cooperation between relevant international, European, national and non-governmental actors.

Organiser**Co-organisers**