



GLOBAL CONFERENCE
ON **EMERGENCY**
MANAGEMENT



Tackling shared threats for a safer world

Programme & Book of Abstracts

**3-5 April
2023**

Maison de la Chimie,
Paris, France



World Organisation
for Animal Health
Founded as OIE

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Introduction & Objectives

Background

We live in a highly uncertain and dangerous world where emergencies can impact all parts of society. The drivers and causes of emergencies are trending upwards meaning that emergencies are expected to increase in their frequency, complexity and severity which threatens One Health and Global Health Security.

The avian influenza, Ebola, African swine fever and COVID-19 epizootics, epidemics and pandemics in recent years have all drawn attention to infectious diseases emergencies that affect public health and animal health and welfare. Veterinary Services responded in all of these events, which required working collaboratively with other agencies and partners.

The COVID-19 pandemic significantly raised the visibility of biological threats whether they have natural, accidental or deliberate origins, as well as exposed vulnerabilities and gaps in whole of society emergency preparedness planning. It also drew attention to the threat of the deliberate release of biological agents, an issue highlighted in April 2020 by the United Nations Secretary-General António Guterres who warned that “the weaknesses and lack of preparedness exposed by this pandemic provide a window into how a bioterrorist attack might unfold.” This threat extends beyond the realm of human health since the deliberate release of a biological agent targeting livestock could have devastating consequences for animal health and welfare, food security, livelihoods and national security.

While traditionally the focus for Veterinary Services has been on infectious disease emergencies, the hazard landscape is much more extensive and there is a greater expectation from governments and society for Veterinary Services to respond to all kinds of emergencies that involve animals or

their products. This can include natural disasters, conflict, radiological, nuclear or chemical events. Furthermore, emergencies are becoming more complex in which multiple events are interlinked and necessitate complex solutions.

Finally, there is increasing concern about other types of hazards such as cybersecurity threats, and disinformation and misinformation

Emergency Management

The World Organisation for Animal Health (WOAH, founded as OIE) recognises that emergency management is a scientific discipline in its own right with a growing evidence base that can support continuous learning and development. Given the diverse hazard landscape, WOAH recognises that no-one sector can manage all types of emergencies alone, and actively works in this regard with partner organisations such as the Quadripartite. Veterinary Services must work across sectors to jointly prepare for and respond to all hazards.

Over the last couple of years, WOAH, the Food and Agriculture Organization of the United Nations (FAO) and the International Criminal Police Organization (INTERPOL) have been working together through a joint project to foster collaboration between Law Enforcement and Veterinary Services to build resilience against emergencies arising from agro-crime and agro-terrorism. The project, funded by the Weapons Threat Reduction Program of Global Affairs Canada, is assessing preparedness for agro-crime and agro-terrorism and developing multi-sectoral capacity building based on its findings. In addition, the project has been scoping tools, models, and approaches to share with the global community that could support the sustainable management of animal health emergencies.



Veterinary Services are valuable assets in safeguarding global health security and must be at the table in high level cross-government frameworks as well as international forums for emergencies and disasters. WOAAH, FAO and INTERPOL are all Members of the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (Global Partnership) and have worked together within this community to draw visibility to the importance of the animal health-security interface and what Law Enforcement and Veterinary Services can contribute to mitigating biological risks.

The Conference

With the support of the United States Department of Defense, Defense Threat Reduction Agency (DTRA), Weapons Threat Reduction Program of Global Affairs Canada, the UK Ministry of Defence and the European Union, WOAAH is hosting the first global conference of its kind to bring multiple sectors together to discuss emergencies that involve or impact animals.

The purpose of the Conference is to highlight that emergency preparedness needs to take an all-hazards approach involving multiple sectors and to demonstrate how this can be operationalised. The conference will showcase innovative and sustainable solutions to mitigate and manage emergencies, bringing together leading experts to explore the way forward for multi-sectoral and all-hazards emergency preparedness.

The Conference will also bridge the gap between animal health and security by highlighting how these two sectors can support each other in emergency management including for deliberate biological events such as agro-crime and agro-terrorism.

What are the objectives?

- › Highlight that emergency preparedness needs to take an all hazards approach involving multiple sectors
- › Strengthen and broaden multi-sectoral networks
- › Promote gender equality
- › Present the outcomes of the WOAAH-FAO-INTERPOL Project on Building Resilience Against Agro-Crime and Agro-Terrorism and development of a road map for future international and interagency activities

How do we achieve those objectives?

- › By showcasing innovative approaches
- › By sharing good practices
- › By engaging participants in active discussion
- › By inspiring participants to go home and take action – reaching out to other sectors, organising simulation exercises and advocating to governments

Organisation of the Conference

Scientific committee

Fanny Ewann

International Criminal Police Organization (INTERPOL)

Ludovic Plee

Emergency Management Center, Food and Agriculture Organization of the United Nations (FAO)

Gail Carson

Global Outbreak Alert Response Network (GOARN),
World Health Organization (WHO)

Salama Al Muhairi

the National Emergency Crisis and Disasters
Management Authority, UNITED ARAB EMIRATES

Rickard Knutsson

Swedish Veterinary Institute, SWEDEN

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Centro Nacional de Sanidad Agropecuaria (CENSA),
CUBA

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University of Nairobi, KENYA

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Animal Health International Affairs Coordination
Department, Senasa, ARGENTINA

Sisira Madurapperuma

Asian Disaster Preparedness Centre, THAILAND

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Weapons Threat Reduction Program, Global Affairs
Canada, CANADA

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International Biosecurity Programme, UNITED
KINGDOM

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Mitigation of Biological Threats, Health Division, the
Association of Southeast Asian Nations (ASEAN)

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Nada Essawy

Resource Mobilisation and Grants Management Officer

Camilla Caraccio

Communications Officer

Gloria Benneth

Administrative Assistant

General Information

Venue

Maison de la Chimie

28 rue Saint-Dominique, 75007 Paris
<https://maisondelachimie.com/>

Languages

The Conference will feature simultaneous interpretation in English, French, Spanish and Arabic.

Follow the conference

Via social media



<https://www.facebook.com/worldanimalhealth>



<https://twitter.com/WOAH#WOAHGlobalConference>



<https://www.linkedin.com/company/worldanimalhealth/>



<https://www.instagram.com/worldanimalhealth/>



<https://www.youtube.com/c/WorldAnimalHealth>



<https://www.flickr.com/photos/woah-photos/>

Via live webcast

<https://www.woah.org/en/event/global-conference-on-emergency-management/>

Via the dedicated pages on the WOAH website

<https://www.woah.org/en/event/global-conference-on-emergency-management/>

Speakers biographies are available on the WOAH website

<https://www.woah.org/en/event/global-conference-on-emergency-management/>

The video recording and working documents of the Conference will be made available on the WOAH website after the end of the event.

Programme

Sunday 2 April 2023

17:00 - 19:00 **Registration**

Monday 3 April 2023

8:30 - 10:00 **Registration**

10:00 - 10:40 **Opening Session**

Chair:

Montserrat Arroyo

Deputy Director General «International Standards and Science», WOA

Hugo Federico Idoyaga Benitez, *President, WOA World Assembly of Delegates*

Trevor Smith, *Deputy Director & Senior Program Manager, Weapons Threat Reduction Program, Global Affairs Canada*

Monique Eloit, *Director General, WOA*

Keith Sumption, *Chief Veterinary Officer, FAO*

Greg Hinds, *Director Counter-Terrorism INTERPOL*

10:40 - 11:00 **Keynote plenary**

Infections at the human/animal interface: shifting the paradigm from rapid detection and response to prevention at the source

Professor David Heymann

London School of Hygiene and Tropical Medicine

11:00 - 12:30

Session 1

The Threat Landscape for Emergencies

Chair:

Jeffrey Cutter

ASEAN

11:00 - 11:15

> A changing hazard landscape: challenges and opportunities

Chadia Wannous
WOA

11:15 - 11:30

> One Health emergencies in Africa

Ahmed Ogwel Ouma
Africa CDC

11:30 - 11:45

> Agro-crime and agro-terrorism, an overlooked biological threat

Fanny Ewann
INTERPOL

11:45 - 12:00

> Cyberbiosecurity

Saif Abed
WHO

12:00 - 12:30

> Discussion

All speakers

12:30 - 14:00

Lunch Break

14:00 - 15:30	Session 2 Early warning systems	Chair: Matthew Stone <i>Global Preparedness Monitoring Board (GPMB)</i>	Workshop Integrating foresight into emergency management Donna Dupont <i>Purple Compass</i> Tianna Brand <i>WOAH</i>
14:00 - 14:15	> WOA's epidemic intelligence for decision making	Lina Awada <i>WOAH</i>	
14:15 - 14:30	> Disrupting Crime, Improving Disease Surveillance Across Borders in the Mekong – A case study	Nick Thomson <i>Pacific Security College, Australian National University</i>	
14:30 - 14:45	> Assessing vulnerabilities for agro-crime and agro-terrorism	Morgan Scott <i>Institute for Infectious Animal Diseases (IIAD)</i>	
14:45 - 15:00	> Earth Observation data in emergency preparedness	Annamaria Conte <i>Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise G. Caporale</i>	
15:00 - 15:30	> Discussion	All speakers	
15:30 - 16:00	Refreshment break		
16:00 - 17:00	Session 3 Research and innovation in emergency management	Chair: Misheck Mulumba <i>WOAH Scientific Commission for Animal Diseases, ARC-Onderstepoort Veterinary Research</i>	Workshop Roles and responsibilities of Law Enforcement and Veterinary Services in response to a deliberate biological event Flavie Vial <i>APHA, UK</i> Fanny Ewann <i>INTERPOL</i> Frederic Poudevigne <i>FAO</i> Jimmy Tickel <i>IIAD</i> Meyir Ziekah <i>Wildlife Division, Forestry Commission, Ghana</i> Stephen Goldsmith <i>FBI</i>
16:00 - 16:15	> Spillover to Disease X: vaccine preparedness for the next pandemic threat	Maina L'Azou Jackson <i>CEPI</i>	
16:15 - 16:30	> Innovations in diagnostics	Primal Silva <i>Canadian Food Inspection Agency</i>	
16:30 - 16:45	> Engagement of the scientific community in emergency management	Salama Almuhaire <i>National Emergency Crisis and Disaster Management Authority, United Arab Emirates</i>	
16:45 - 17:00	> Discussion	All speakers	
17:00 - 18:00	Session 4 Resource mobilisation for emergencies	Chair: Chadia Wannous <i>WOAH</i>	
17:00 - 18:00	> Panel discussion	Alicia Gallardo <i>WOAH Aquatic Animal Health Commission, FARMAVET, Chile</i> Franck Berthe <i>World Bank</i> Anja Boshoff De Witt <i>Meat Board of Namibia</i> Anne Sophie Lequarre <i>European Commission</i>	

Tuesday 4 April 2023

9:00 - 10:30	Session 5 Networking to prepare for emergencies	Chair: Claire Standley <i>Georgetown University</i>	
9:00 - 9:15	> Cameroon's One Health Taskforce	Jean Marc Feussom <i>Network for Animal Diseases, Cameroon</i>	
9:15 - 9:30	> Integrating One Health into chemical, biological, radiological and nuclear (CBRN) international networking	Anne Sophie Lequarre <i>European Commission</i>	
9:30 - 9:45	> Animal Health and the Tunisian National Taskforce for Bioterrorism	Heni Haj Ammar <i>General Directorate of Veterinary Services, Ministry of Agriculture, Tunisia</i>	
9:45 - 10:00	> A regional approach for a multilateral preparedness plan for public health emergencies	Jeffrey Cutter <i>ASEAN</i>	
10:00 - 10:30	> Discussion	All speakers	
10:30 - 11:00	Refreshment break		
11:00 - 12:30	Session 6 Capacity building for emergencies	Chair: Barbara Alessandrini <i>WOAH</i>	
11:00 - 11:15	> Good Emergency Management Practice (GEMP): a multi-sectoral approach	Ludovic Plee <i>FAO</i>	
11:15 - 11:30	> Joint criminal and epidemiological investigation training	Stephen Goldsmith <i>FBI</i>	
11:30 - 11:45	> WOA's support to the Global Partnership Signature Initiative to Mitigate Biological Threats in Africa	Madison Wimmers <i>WOAH</i>	
11:45 - 12:30	> Discussion	Nada Essawy <i>WOAH</i>	
		All speakers	
12:30 - 14:00	Lunch break		
14:00 - 15:30	Session 7 Simulation exercises	Chair: Gary Vroegindewey <i>Lincoln Memorial University</i>	Workshop Advocacy for biosecurity preparedness to parliamentarians
14:00 - 14:15	> Nordic Baltic Veterinary Contingency Group: A regional approach to simulation exercises	Karl Stahl <i>Swedish Veterinary Institute</i>	
14:15 - 14:30	> Celulex Exercise, a multi-agency CBRN exercise	Joana Maia Pita <i>Portuguese Army</i>	Wilmot James <i>Brown University</i>
14:30 - 14:45	> Exercise Phoenix – preparing to respond to agroterrorism	Kathy Gibson <i>EuFMD</i>	Eloise Todd <i>Pandemic Action Network</i>
15:00 - 15:30	> Discussion	All speakers	Matthew Stone <i>GPMB</i>
15:30 - 16:00	Refreshment break		

16:00 - 17:00	Session 8 Gender and animal health emergencies	Chair: Katharina Stark <i>Federal Food and Veterinary Office, Switzerland</i>	Workshop Opportunities and challenges of building capacities for emergency veterinary workforce. Interactive discussion with WOA and its Collaborating Centre Networks Barbara Alessandrini, WOA
16:00 - 16:20	> A review of the integration of gender into animal health emergency preparedness	Clare Wenham <i>London School of Economics</i>	
16:20 - 17:00	Anna Okello , Australian Centre for International Agricultural Research (ACIAR) Nonye Welle , Nigeria Police Force Scott Spence , Consultant		
17:00 - 18:10	Session 9 Emergency Response	Chair: Emma Ross <i>Chatham House</i>	
17:00 - 17:15	> Strategies for implementing One Welfare into emergency response	Hayley Squance <i>BML Consulting Limited</i>	
17:15 - 17:30	> Veterinary laboratory support to the COVID-19 response	Maxat Berdikulov <i>National Veterinary Reference Center, Kazakhstan</i>	
17:30 - 17:45	> Challenges faced by first responders	Guy Collyer <i>QISS Global</i>	
17:45 - 18:10	> Discussion	All speakers	
18:10 - 19:00	Poster session cocktail		

Wednesday 5 April 2023

9:00 - 10:15	Session 10 Response to complex emergencies	Chair: Adrien Sivignon <i>INTERPOL</i>
9:00 - 9:15	> Response to nuclear and radiological emergencies affecting animal health	Ivancho Naletoski <i>IAEA</i>
9:15 - 9:30	> A regional response to a volcanic disaster occurring, the experience of CaribVET	Jennifer Pradel <i>CaribVET</i>
9:30 - 9:50	> Agricultural crime-terrorism case study	Chris Morley <i>Chris Morley Consulting</i>
9:50 - 10:15	> Discussion	Ian Jensen <i>Former Metropolitan Police, UK</i>
10:15 - 10:45	Refreshment break	All speakers

10:45 - 12:00	Session 11 Risk communication and community engagement	Chair: Andrea Ellis <i>Consultant</i>	Workshop on Simulation Exercises How to plan, deliver and evaluate a multi-agency simulation exercises Gary Vroegindewey <i>Lincoln Memorial University (Chair)</i> Daniel Donachie <i>WOAH</i> Julio Carvalho <i>Portuguese Army</i> Christine Uhlenhaut <i>UNODA</i>
10:45 - 11:00	> Disinformation and misinformation; a shared threat for veterinary services and law enforcement	Peter Ballantyne <i>Consultant</i>	
11:00 - 11:15	> Community engagement in response to rabies	Tenzin Tenzin <i>WOAH</i>	
11:15 - 11:30	> Risk communication for African swine fever	Janice Garcia <i>Bureau of Animal Industry, Philippines</i>	
11:30 - 12:00	> Discussion	All speakers	
12:00 - 13:30	Lunch break		
13:30 - 14:45	Session 12 Recovery and learning from emergencies	Chair: Gail Carson <i>WHO Global Outbreak Alert Response Network</i>	Interactive demonstration EBO-SURSY Alerte Game for Surveillance in Wildlife Sophie Muset <i>WOAH (Co-Chair)</i> Marie-Marie Olive <i>CIRAD (Co-Chair)</i>
13:30 - 13:45	> After-action: what next?	Ivi Luuk <i>Estonian Ministry of the Interior</i>	
13:45 - 14:00	> Lessons identified from the avian influenza epidemic for emergency management	Gordon Hickman <i>DEFRA, UK</i>	
14:00 - 14:15	> ASF in China: Current status, control measures and experience	Gongmin Wang <i>Bureau of Animal Husbandry and Veterinary Services, People's Republic of China</i>	
14:15 - 14:45	> Discussion	All speakers	
14:45 - 15:15	Refreshment break and end of technical sessions		
15:15 - 16:00	Recommendations and close of conference	Chair: Montserrat Arroyo	
15:15 - 15:45	> Conclusions and adoption of recommendations		
15:45 - 16:00	> Closing Ceremony		

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S1.1

Infections at the human/animal interface: shifting the paradigm from rapid detection and response to prevention at the source

David Heymann

London School of Hygiene and Tropical Medicine

For infections at the animal-human interface the current paradigm, in many instances, is detection of disease in humans after spillover from an animal source (humans are acting as sentinels for diseases which could have been detected earlier in animals). Spillover events can potentially lead to high morbidity and mortality in humans and international spread. If the source of infections to humans is continuous (e.g., for highly pathogenic avian influenza H5N1 infected poultry) the response involves culling large numbers of animals, and severe economic consequences to society as a whole, including the agriculture industry. Shifting the paradigm to prevention and/or detection in animals, and prevention of human infection at the source would mitigate many of these potential outcomes. With current understanding and public health tools, including education for behaviour change, vaccines and point of use diagnostic testing, prevention at the source is possible. But understanding of the cost benefit of such a shift is necessary to demonstrate its feasibility and acceptance.

S1.2

A changing hazard landscape: challenges and opportunities

Chadia Wannous

World Organisation for Animal Health (WOAH)

The world is witnessing rapidly evolving and complex global risk landscape, with increasing frequency and intensity of hazards combined with escalating vulnerability of communities and aggravated existing inequities between and within countries.

We are struggling with multiple crises at the same time, ranging from conflict and wars to pandemics to climate crisis and biodiversity loss, all of which have direct impacts upon health and wellbeing of people, animals and the planet.

This complicated risk environment is outpacing our organizational capacities to prevent, prepare, response and recover and build back better our societies and economies and have demonstrated clearly the importance and need of build resilient and sustainable health systems that are capable of preventing and mitigating threats at the human-animal-plant-environment interface through the One Health Approach.

Opportunities to build a better healthier world for future generations and contributing to sustainable development are at our reach and we must act on them now with urgency.

This requires concerted efforts with our Member Countries and stakeholders to carry out transformative changes to prevent and reduce the risks through:

1. Prioritizing One Health in the international political agenda, including in global instruments for pandemics and in the pandemic fund for prevention, preparedness and response.
2. Strengthening national One Health policies, strategies and plans, backed by legal frameworks and sustainable financing, including funding for prevention of threats.
3. Building capable intersectoral OH workforce.
4. Strengthening prevention of health threats at source and reduce the risk of pathogens spillover events from animals to humans.
5. Strengthening One Health scientific evidence and knowledge exchange, and data sharing and facilitating equitable access to tools and technologies.

The Quadripartite One Health Joint Plan of Action (OH JPA)¹ provides the framework for making this happen. We encourage adoption and implementation of this plan at all levels.

Keywords:

Hazards, risk reduction, prevention, One Health

¹ <https://www.woah.org/en/document/one-health-joint-plan-of-action-2022-2026-working-together-for-the-health-of-humans-animals-plants-and-the-environment/>

S1.3

One Health emergencies in Africa

Ahmed Ogwell Ouma / Yewande Alimi

Africa Centres for Disease Control and Prevention (CDC)

One Health is a collaborative, multisectoral and transdisciplinary approach used to attain optimal health outcomes for people, animals, plants, and their shared environment.

Africa CDC framework for One Health Practice in NPHIs, 2020

The African continent is facing various one health threats, including zoonotic disease outbreaks, antimicrobial resistance, and environmental degradation. The Africa CDC is using a One Health approach, which is a collaborative, multisectoral and transdisciplinary approach, to monitor and respond to health threats that impact the environment, animals, and humans. The One Health approach involves collaboration between human, animal, and environmental health sectors, as well as other stakeholders, to achieve better health outcomes. Strengthening One Health approach across AU member states will improve the continent's ability and capacity to efficiently prevent, detect, and respond to emerging and re-emerging one health threats and emergencies.

To address and control one health emergencies, Africa CDC has adopted a One Health approach to detect and respond to One health threats, for better health and economic outcomes. As changes in policy and practice across multiple sectors are required, including strong political commitment, legal instruments, financial investments, and national one health programs, hence the implementation by Africa CDC of Africa's New Public Health Order, to raise awareness and secure commitments via its five pillars to improve the continent's ability to prevent, detect, and respond to health threats and emergencies.

Keywords:

One Health, Health emergencies, Africa Political Commitment, Prevent, Detect, and Respond.

S1.4

Agro-crime and agro-terrorism, an overlooked biological threat

Fanny Ewann

International Criminal Police Organization (INTERPOL)

Animal agrocrime can be seen, in the light of the animal agroterrorism definition, as the spread of disease in animals linked to criminal activities. Understanding the link between criminal activities and disease spread - outside of deliberate attempts to spread disease in animals - requires the combined expertise of law enforcement and veterinary services. Unfortunately, too often, due to information siloes, a lack of awareness in both sectors, and a lack of a clear definition of this type of crime, there has been a failure to highlight the frequency of animal agrocrimes and the impact on both veterinarian and law enforcement work.

Through their joint project on “Building resilience against agrocrime and agroterrorism”, INTERPOL, the World Organisation for Animal Health and the Food and Agriculture Organization of the United Nations supported by numerous experts have worked on an agrocrime definition. Through its Network of National Central Bureaus and the analysis of incidents involving animal pathogens, INTERPOL and partners have identified different types of animal agrocrime. The challenges they represent and potential solutions to overcome them will be further discussed in the perspective of a One Health approach covering the areas of prevention, preparedness and response to such events.

Keywords:

Agroterrorism, Agrocrime, Biological Threat; Interagency cooperation; One Health

S1.5

Cyber-attacks, infectious diseases and the next global public health emergency

Saif Abed

World Health Organization (WHO)

In a globalised world driven by the digital transformation of critical infrastructure the recognition of the catastrophic risks associated with greater interconnectivity are seldom fully addressed until it is too late. The COVID-19 pandemic demonstrated how hospitals were a perfect target for organized cyber-crime groups seeking to gain financially by holding critical clinical data to ransom. However, less publicised were the extensive vulnerabilities that existed and were exploited across the biomedical supply chain including academic research institutions, biotechnology vendors, diagnostic test centres and vaccine manufacturers. Recent research has added to this by detailing how negative pressure systems within high-containment laboratories could be hacked to deleterious effect. The purpose of this talk will be to increase visibility of these emerging risks and raise awareness of the work of the World Health Organization to characterise and address these complex threats through partnerships, diplomatic pathways and capacity building initiatives.

Keywords:

Cybersecurity; healthcare; CBRN; biotechnology; public health

S2.1

WOAH's epidemic intelligence for decision making

Lina Awada / Paolo Tizzani

World Organisation for Animal Health (WOAH)

The World Organisation for Animal Health (WOAH) is the intergovernmental organisation responsible for improving animal health worldwide. Since its founding 100 years ago, one of its primary missions has been to ensure transparency of animal health events to enable decision-making and prevent the international spread of animal diseases. This mission has historically relied on mandatory reporting by Members, according to requirements defined in the organisation's standards. However, 20 years ago, the Members mandated the organisation to conduct epidemic intelligence to take the mission of transparency to the next step. This activity is known as the cycle of organised and systematic collection, analysis and interpretation of information from all sources to enhance early detection of health events and early warning for timely response, based on an adequate assessment of the associated risk. Over the past 20 years, WOAH has gradually expanded its epidemic intelligence by devoting more resources, including investing in technological tools to manage large amounts of data and sources. However, WOAH has never changed its rule of asking Members for confirmation of information before publishing any alert. Over the past 20 years, epidemic intelligence improved international transparency, being the source of 10% of the alerts published by WOAH. As a consequence, it has become critical for response decision making: for Members' public and private sectors to implement measures to prevent disease introduction, for WOAH to adapt in a timely manner and provide adequate support to its Members and link with its partners for effective cross-sector collaboration, and finally for the general public to have access to validated information and avoid misinformation. In conclusion, over the past 20 years, epidemic intelligence has been essential for WOAH to evaluate the performance of its early warning activity and to fill some gaps, while maintaining its role and responsibility in publishing only information formally validated by the Members. Given the growing need for cross-sectoral coordination to address emerging threats, WOAH has engaged in activities evolving into a One Health epidemic intelligence.

Keywords:

World Organisation for Animal Health, epidemic intelligence, early warning, response, decision making

S2.2

Disrupting crime, improving disease surveillance across borders in the Mekong: a case study

Nicholas Thomson

Pacific Security College, Australian National University

The link between the unregulated cross border movement of livestock and wildlife and emerging biological threats is undisputed yet countermeasures to both issues remain unlinked. This presentation builds on a growing body of work that seeks to bring a multi-agency lens to both the enforcement of illegal movement and surveillance of biological threats. Given the occupational health and safety implications for enforcement officers countering these crimes, enhancing biological threat preparedness, knowledge and practices amongst frontline enforcement personnel provides an opportunity to orientate law enforcement to their critical risk and role in countering biological threat. Furthermore, raising the biological threat implications of illegal/informal movement of animals as a priority in national and regional security would bolster countermeasures and bring a multi-agency focus to the work. This presentation builds on emerging cross agency efforts along borders of Southeast Asia's Mekong Region and highlights opportunities for law enforcement, health and agriculture would meet the emerging needs of countering crime while developing a much -needed operational focus on enhancing early warning multiagency disease surveillance.

S2.3

A risk-based mutual insurance framework to generate national vulnerability indices for agro-crime or agro-terror events involving infectious disease agents

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Intentional release of an infectious disease pathogen that targets vulnerable animal populations constitutes agro-crime or agro-terrorism. Such action not only negatively impacts animal health but may threaten global peace and health security and impose enormous economic costs on nations. We used the World Organisation for Animal Health (WOAH) quantitative risk assessment framework to generate an approach for developing vulnerability indices for 25 randomly selected WOAH Member Countries with high levels of data completeness against four pathogens (African swine fever virus (ASFv), *Brucella abortus* (BA), Foot-and-mouth disease virus (FMDv), and highly pathogenic avian influenza virus (HPAIV).

Variables to build release, exposure, preparedness, and resilience components of each country's vulnerability index were generated from open-source databases generated by multiple international organizations and consisted of: 1) the number and density of the targeted populations, 2) availability of technical tools and the health services and disease control measures applied by each country, and 3) the political, economic, and research and development capabilities of each country. Component scores for each pathogen and country were calculated using three different index construction approaches: arithmetic mean, distance matrix, and principal component analyses (PCA). An overall vulnerability index for each country and pathogen was derived from the final scores of each component.

The final component scores as well as the overall vulnerability scores obtained using three different methods showed highly consistent results; overall, PCA (normalized and non-normalized) yielded the greatest potential to discriminate differences among countries and regions. The framework may be readily modified by policymakers and national/international agencies and used to improve risk management strategies based on its transparency and dependence on reliable and widely available databases. This risk-based mutual insurance scheme allows for an expandable global framework for prioritizing capacity building investments and resource allocations to reduce vulnerabilities to zoonotic diseases and increase resilience.

Acknowledgements:

This work was supported through the project "Building Resilience Against Agro-Crime and Agro-Terrorism" coordinated by the World Organisation for Animal Health (WOAH), the Food and Agriculture Organisation of the United Nations (FAO), and the International Criminal Police Organization (INTERPOL). Funding was provided by the "Weapons Threat Reduction Program" of Global Affairs Canada.

S2.4

Earth Observation data in emergency preparedness

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The era we are living in is characterized by an enormous amount of data produced by all kinds of instruments and sensors. In this midst of data generation, Earth Observation represents one of the main field in which petabyte of data are produced every day. Images of our planet from orbit are acquired continuously; they have become powerful scientific tools to enable better understanding and improved management of the Earth and its environment. Over the past 30 years, advancements in geographic information systems and satellites for Earth observation have significantly improved the monitoring of weather, climate, and both environmental and anthropogenic factors that impact epidemic and non-epidemic emergencies. Terra and Aqua satellites, since 1999, deliver information on vegetation indices, land surface temperature, land cover estimates, all factors which have been shown to be related to facets of vector-borne diseases, and thus used in many epidemiological studies and development of early warning systems. The most recent advance in Earth Observation is the Copernicus programme which through a series of satellite missions called the 'Sentinels', provide routine land, ocean and atmospheric monitoring of the Planet every week, up to 10 m resolution. Different applications have been developed thanks to the use of the most recent EO data: the Copernicus Emergency Management Service provides detailed information for selected emergency situations that arise from natural or man-made disasters anywhere in the world. The increasing availability and complexity of EO data has led to new opportunities and challenges in human and veterinary epidemiology and the new EO programs, infrastructure and expertise offered by national and international space agencies are an unmissable value to improve surveillance, emergency response and preparedness, and effectively develop early warning systems.

Keywords:

Earth Observation, emergency, vector borne diseases, satellite, epidemiology

S3.1

Spillover for disease X : vaccine preparedness for the next pandemic threat

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Coalition for Epidemic Preparedness Innovations (CEPI)

CEPI’s Disease X program encompasses the CEPI aspirational goal to deliver a vaccine within 100 days of a recognition of a Disease X outbreak. The Disease X program is focused on developing vaccine libraries for the viral families that have a high likelihood for a Disease X emergence and to evaluate these vaccines from the libraries through preclinical and clinical development to prepare for deployment within 100 days of a Disease X emergence. This strategic positioning is in alignment with CEPI 2.0 Prepare, Transform and Connect principles. The preparatory development will enable the establishment of a virus ranking system for epidemic likelihood, the generation of the vaccine libraries using rapid response platforms, and to gain more knowledge about animal models and clinical studies about the disease conditions from lesser-known viruses with high outbreak potential. The Transform principles are tied to the use of innovative immunogen design and novel rapid response platforms to create and evaluate the libraries. The Connect principles underscore the highly interactive nature of the Disease X program in cross-cutting collaborations across CEPI’s portfolio and VRD research units with the common goals to link early Warning Surveillance, Disease X libraries and Emergency Response initiatives with international partners and agencies. These together will aim to significantly reduce the response time to deploy a vaccine for the emergence of unknown threats, and thus reduce the humanitarian and economic burden of future epidemics and prevent the likelihood of an epidemic becoming a pandemic.

Keywords:

Disease X, vaccine preparedness, vaccine libraries, virus ranking, spillover, 100 Days Mission

S3.2

BSL4ZNet: Enhancing high-containment laboratory preparedness against emerging bio-threats through diagnostic innovation and knowledge sharing

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The Biosafety Level 4 Zoonotic Laboratory Network (BSL4ZNet) led by the Canadian Food Inspection Agency (CFIA) is a well-functioning international network composed of 17 government organizations with animal or public health mandates in Canada, US, UK, Germany and Australia. Partner laboratories of BSL4ZNet possess an impressive array of laboratory capabilities in research and diagnostics to counter emerging high consequence pathogens. The BSL4ZNet currently operates on four major pillars: (1) Training world class personnel, (2) Scientific excellence, (3) Institutional cooperation and (4) International response focused on advancing targeted initiatives of the network harnessing specialized knowledge and building scientific capabilities. The emergence of the SARS COV2 pandemic triggered prompt action by partner organizations which resulted in effective intelligence-sharing in real time, research collaborations, material transfers and the establishment of a scientific forum for broader dissemination of knowledge to government, international and academic organizations.

A key area of focus for many laboratories in BSL4ZNet is diagnostic innovation which facilitates early and precise detection of animal and zoonotic disease incursions enabling rapid and effective emergency response actions. The presentation will highlight the innovative work of the CFIA's National Centre for Foreign Animal Disease (NCFAD), aimed at improving the sensitivity and reducing turnaround times in diagnosing foreign animal diseases (FADs) that can be applied directly in laboratory and field settings. Examples of diagnostic innovations include the development and validation of field deployable molecular assays for rapid detection of African swine fever (ASF) and foot-and-mouth disease, the use of CRISPR for point-of-need diagnostic testing for emerging zoonotic diseases, enhanced use of sequencing data for FAD diagnostics and monitoring changes such as mammalian adaptation of highly pathogenic avian influenza viruses (HPAI), the use of artificial intelligence based algorithms for FMD vaccine matching as well as the use of non-invasive aggregate samples for virus detection.

Keywords:

BSL4ZNet, FMD, ASF, HPAI, Diagnostics, Innovation

S3.3

Engagement of the scientific community in emergency management

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National Emergency Crisis and Disaster Management Authority, United Arab Emirates

Emergency and crisis management research is becoming increasingly important as the risk landscape is evolving and becoming more complex. Research plays a vital role in understanding the immediate and long-term effects of crisis and the best strategies for prevention, mitigation, and recovery. This enables decision-makers to make better informed decisions, develop effective response strategies and allocate resources more efficiently. However, conducting research during emergencies and crisis can be challenging, as it often requires a different approach from conventional academic research. Emergency research often needs to be conducted rapidly and under highly stressful conditions, making it essential to train and equip researchers adequately. The COVID 19 pandemic has highlighted the critical importance of rapid research and investment in research infrastructure, data collection and analysis for ensuring effective responses to future crisis. Prioritizing research is crucial for better understanding the nature of emergency and crisis and develop effective strategies to mitigate their impacts.

The UAE government has launched several initiatives to promote research, development and innovation which aims to explore solutions to current and future challenges. In addition, UAE government developed the government accelerators concept, which is based on the importance of multi agencies collaboration involving government, private sectors, and the academia in order to address challenges and accelerate evidence-based decisions.

In an attempt to overcome the challenges of emergency research, we developed a national implementation guidance to ensure better engagement of the scientific community in emergency management. The guidance outlines key objectives including promoting national research to advance knowledge for better decision-making; establishing a collaborative network of researchers; developing a national research roadmap for national challenges and establishing a national resource database to facilitate rapid emergency and crisis research. To achieve the objectives, the guidance focuses on employing knowledge brokering mechanism and prerequisite elements to ensure a high impact research ecosystem during peacetime and emergency. The guidance will also provide an opportunity as a useful model to support the implementation of the one health joint plan of action developed by the quadripartite (FAO, WHO, WOA and UNEP) to integrate systems and capacities to work collectively together with improved coordination and communication.

Keywords:

Rapid research, Knowledge broker, Emergency, Crisis, One health

S5.1

Cameroon's One Health task force

Jean-Marc Feussom

Network for Animal Diseases, Cameroon

Not available

S5.2

The EU CBRN Risk Mitigation Centres of Excellence: a multi sectoral initiative increasing preparedness of partner countries to health crisis

Anne-Sophie Lequarré

European Commission

In a globalized world with rapid and extensive circulation of persons and good, inadequate control over high-risk chemical, biological, radiological and nuclear (CBRN) materials pose a danger to the security of local populations but also worldwide. The EU CBRN Centres of Excellence Initiative is an external civilian security programme focusing on the mitigation of risks and threats related to CBRN material, stemming from accidental, natural or criminal sources. Established in 2010, the initiative currently includes 64 partner countries grouped into eight Regions.

Through the initiative, the EU funds regional projects strengthening partner countries capacities to prevent, prepare for and respond to each threats specifically or using a CBRN all-hazard approach. Global infectious disease outbreaks have always been of concern for the international community. The COVID-19 pandemic underlined the importance of improving the often-poor reactive bio-surveillance systems with rapid detection capacities and efficient reporting to key agencies. Several projects are particularly relevant. They build capacities for an improved diagnostics of contagious diseases and facilitate the setting of national multisectoral mechanisms to detect unusual event and support the response. Fellows from **MediPIET**, a regional on-the-job training epidemiology programme in the Mediterranean, Black Sea, were deeply involved in the response of their countries and could exchange experience. **MediLabSecure**, a One-health project clustering human and veterinarian virologists with medical entomologists and public and animal health representatives, enhances preparedness to any emerging viral diseases. At the start of the pandemic, the European Commission launched **LABPLUS AFRICA**, addressing immediate needs for preparedness and response in this continent and helping the Institute Pasteur Dakar to become a bigger regional centre reinforcing the health system thanks to ad hoc technical support to African laboratories. Finally, procedures to ensure appropriate handling of potentially hazardous sample are also needed. **Stronglabs**, implemented by WHO, directly targets capacities of the national public health laboratory helping them produce reliable test results and set appropriate laboratory quality management systems.

Keywords:

Multi-sectoral, regional projects, preparedness, one-health

S5.3

Animal health and the Tunisian National Taskforce for Bioterrorism

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Selon l'organisation mondiale de la santé animale 60 à 70% des maladies touchant l'homme sont d'origine animale. Les agents biologiques pouvant provoquer des crises zoo sanitaires touchant l'Homme, l'animal et l'environnement sont candidats à l'agro-criminalité et au bioterrorisme.

La Tunisie est sous la menace continue d'introduction de maladies animales transfrontalières. Des agents de menace biologique peuvent s'introduire par plusieurs portes potentielles d'entrée, on cite l'exemple de Fièvre aphteuse, la Peste des Petits Ruminants, la fièvre de la vallée du Rift.

La situation sanitaire en 2022 est considérée comme stationnaire, les principales maladies qui font de l'actualité sont la rage, l'EHDV, la PPR, la Variole ovine, la Trypanosomose chez le dromadaire.

La gestion de crises sanitaires en relation avec les agents pathogènes faisant partie d'agents potentiels de bioterrorisme est de type complexe. A ce stade d'intervention les services vétérinaires reconnaissent des limites dans la mise en place de mesures de lutte adéquates et cela pour des raisons de complexité et de multitude d'intervenants compétents ainsi que l'arsenal juridique et réglementaire malgré la présence d'un plan d'urgence régissant la gestion de crises sanitaires.

Les services vétérinaires jouent un rôle primordial dans le renforcement des capacités et la réduction des menaces biologiques liées à la santé animale notamment en matière de préparation, d'alerte et d'intervention rapide.

La « Taskforce » entité sous l'égide du Ministère de la défense nationale unie les forces sécuritaires, elle coordonne les activités de lutte contre les menaces biologiques entre les forces appliquant la loi.

L'échange d'expériences, le partage d'informations et le renforcement mutuel des compétences entre les différentes structures est un axe stratégique pour le développement des capacités de gestion de crises. L'harmonisation des procédures opérationnelles standards entre les différents partenaires est un objectif à atteindre notamment dans le cadre du projet « Coordination interinstitutionnelle renforçant la résilience contre le bioterrorisme et l'agro-criminalité affectant la santé animale ».

La Taskforce est une entité qui facilite la tâche des services vétérinaires pour la lutte contre les agents de bioterrorisme affectant la santé des animaux et pouvant se transmettre l'Homme.

Mots clés :

Bioterrorisme, Maladies animales, Gestion de crise, coordination, BiotaskForce, une seule santé

S5.4

A regional approach for a multilateral preparedness plan for public health emergencies

Jeffrey Cutter

Association of Southeast Asian Nations (ASEAN)

Not available

S6.1

Good Emergency Management Practice (GEMP) a multi-sectoral approach

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Food and Agriculture Organization of the United Nations (FAO)

The Food and Agriculture Organization of the United Nations (FAO) Emergency Management Centre (EMC) is a global mechanism, providing emergency support and expertise in emergency management and incident coordination to countries and regions faced with disease outbreaks. To ensure maximum impact, the Centre operates under four pillars: Preparedness, Response, Incident coordination, and Collaboration and resource mobilization.

EMC was created in 2006 as a global response platform to the outbreak of H5N1, a disease affecting both animals and humans. Part of EMC's mandate was to collaborate, at the global level, with the World Health Organization (WHO) and the World Organisation for Animal Health (WOAH) to address the outbreak and engage in a One Health approach. Since its establishment, EMC has continued to operate and deliver activities in close collaboration with One Health partners, enhancing and strengthening its One Health mandate. By engaging in One Health activities, EMC supports FAO's Strategic Framework 2022-31 through its Programme Priority Area BP3 (Better Production – One Health).

In the past year, EMC has expanded its scope of action, going beyond animal health to adapt its tools and extend its expertise to other sectors, ensuring emergency management support to even more stakeholders. Equipped with the well-rehearsed skills and extensive network to deploy emergency missions upon request and provide coordination support for incidents at all levels, EMC continues to expand its preparedness, response and incident coordination skillset, working in collaboration with partners to ensure harmonious alignment with existing mechanisms in the emergency management sector.

S6.2

Joint criminal and epidemiological investigation training

Stephen Goldsmith

Federal Bureau of Investigations (FBI), USA

In 2015, Subject Matter Experts from the FBI, USDA APHIS Veterinary Services, and Oklahoma State University developed the “Animal-Plant Health Joint Criminal-Epidemiological Investigations Course” (“APH Crim-Epi”) and began teaching to audiences linking state departments of agriculture, US Department of Agriculture, the FBI, state-local-tribal-territorial law enforcement, emergency management and HAZMAT agencies, private sector agricultural producers, academia and universities, the Cooperative Extension Service, and Customs and Border Protection personnel.

The APH Crim-Epi Course concept is based on the lessons learned from the joint investigation between the US CDC (Centers for Disease Control and Prevention), state and local health departments, and the FBI and state-local law enforcement agencies during the US bioterrorism incident case investigation of the deliberate use of highly refined Anthrax materials that was sent to multiple victims by means of postal letters filled with Anthrax spores.

The APH Crim-Epi Course teaches the core joint criminal-epidemiological investigations concepts designed to rapidly share suspicious information about unusual disease incidents and how to differentiate between intentional, natural, or accidental introduction and manipulation of animal and plant disease agents.

Keywords:

Criminal, Epidemiological, Joint Investigation, Agriculture, information sharing, FBI, USDA

S6.3

WOAH's support to the Global Partnership Signature Initiative to Mitigate Biological Threats in Africa

Madison Wimmers / Nada Essawy

World Organization for Animal Health (WOAH)

WOAH contributes to many global initiatives, including the Signature Initiative to Mitigate Deliberate Biological Threats in Africa, led by the Global Partnership against the Spread of Weapons and Materials of Mass Destruction (GP), a G7-led international initiative. The Africa Signature initiative aims to reduce bio-threats by working on four programmatic pillars: i) Biosafety and Biosecurity; ii) National Governance Structures; iii) Surveillance and Epidemic Intelligence; and iv) Non-proliferation.

In light of this Initiative and thanks to funding from Global Affairs Canada's Weapons Threat Reduction Program, WOAH is implementing the Project *Fortify Institutional Resilience against Biological Threats* (FIRABioT), which aims to support WOAH Members in Africa to improve their capacity to respond to emergencies, especially those related to deliberate events. The ten priority countries participating in the FIRABioT Project have defined, according to their needs and capacities, the activities to be implemented within four principal areas of interest: Disease Intelligence, Sustainable Laboratories, Emergency Management, and Veterinary Legislation.

Building on its strategy for bio-threat reduction, over the years, WOAH has developed and implemented a suite of Programmes and Activities in close collaboration with its four offices in Africa (Bamako (Mali), Nairobi (Kenya), Tunis (Tunisia), and Gaborone (Botswana)) as well as its established relationships with its Members, to support the first three pillars of the Signature Initiative.

Keywords:

WOAH, Signature Initiative, Global Partnership, Africa, Biological Threats, Biosafety, Biosecurity

S7.1

Nordic Baltic veterinary contingency group : a regional approach to simulation exercises

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The Nordic Baltic Veterinary Contingency Group (NBVCG) was established in 2006 after an initiative from the Nordic Council of Ministers. The NBVCG is an ongoing project within the Nordic Working Group for Microbiology & Animal Health and Welfare (NMDD).

The primary objective is to improve cooperation, communication and the exchange of information and experience between the veterinary authorities within the Nordic Baltic region and on international level, in the context of contingency planning and during animal disease crises.

The secondary objectives is to increase awareness of epizootic diseases and zoonoses among professionals and stakeholders within the region, to identify areas of improvement in contingency planning and also to obtain and spread knowledge related to fighting infectious animal diseases.

In order to comply with the objectives, the Group has arranged a number of activities including seminars, expert meetings, workshops and simulation exercises. The exercises have covered economical important exotic diseases such as foot and mouth disease, African swine fever, West Nile fever, Bluetongue, Viral Hemorrhagic Septicemia in trout and African Horse Sickness.

Due to climate change and challenges in security in northern Europe, epizootic diseases have to be seen in a wider concept in the future, including human-animal partnership, “one-health”, agro crime and globalization. These changing circumstances will have an impact on the contingency planning and the need for cooperation and exchange of experience and knowledge between adjacent countries.

Keywords:

Contingency planning, cooperation, simulation exercise

S7.2

CELULEX Exercise, a multi-agency CBRN exercise

Joana Maia Pita

Portuguese Army, Portugal

The CELULEX is a simulation exercise organized annually by the Portuguese Army with a focus on training Biological, Chemical and Radiological capacities.

Over the years, the CELULEX exercise allowed the players a safe environment to practice their roles, testing new procedures and combining the interoperability between Civilian and Military Entities.

On the biological capacity, CELULEX has been emphasizing the Animal Health-Security interface, with a wide range of realistic scenarios, agents and challenges to the participant teams.

On the last edition, the 10th, players (from different agencies and countries) faced a scenario of a deliberate release of an emergent pathogen in an Equestrian event. The participants were the Biodefense Military Laboratory Unit of Portuguese Army, the Directorate General of Food and Veterinary Affairs (DGAV), the Spanish Army and the Lisbon Firefighters Regiment, under the command of National Authority for Emergency and Civil Protection. The observers included external participants from WOA and FAO.

The CELULEX exercise has been crucial to build relationships and networks with other countries and agencies and to improve multi-sectorial cooperation, aiming to adopt a One Health concept.

Keywords:

Simulation exercise, Animal Health, Security, emergency preparedness, One Health, army

S7.3

Exercise Phoenix – preparing to respond to agroterrorism

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³ INTERPOL

⁴ Food and Agriculture Organization of the United Nations

⁵ Institute of Infectious Animal Diseases

Exercise Phoenix was an international simulation exercise held at the conclusion of a project to build sustainable resilience against animal health emergencies caused by agro-terrorism and agro-crime. FAO, INTERPOL and WOAHA were partners in this project, supported by the Weapons Threat Reduction Program of Global Affairs Canada.

The aim of Exercise Phoenix was to improve the preparedness and coordination of national and regional veterinary services, law enforcement agencies, and international organizations to work together in response to an agro-terrorism incident.

Exercise Phoenix included three regional tabletop exercises held almost simultaneously in the host countries of Tunisia, (North Africa), Jordan (Middle East) and Thailand (Southeast Asia) from 13 – 16 February. The regional exercises were followed by a tabletop exercise for international organizations in Italy on 28 February 2023. Exercise Phoenix was facilitated in each region by a group of international and local animal health and law enforcement experts, with global coordination from FAO Headquarters in Rome, Italy. The exercise was conducted in English (Southeast Asia and Middle East) and French (North Africa), with translation into Arabic available in two regions.

Participants from 12 countries responded to a fictitious scenario affecting animal health and food security, which required cooperation between law enforcement and veterinary services. Scenario injects were delivered through exercise simulation software to avoid the printing of sensitive scenario material.

Participants worked together on joint threat assessments, investigation and response to the developing scenario. Participants also discussed the roles and responsibilities of regional animal health and law enforcement networks and international organisations in an agro-terrorism incident.

Because of the subject matter and diversity of participating agencies, countries, regions and organisations, Exercise Phoenix was an ambitious and complex exercise to plan and deliver.

Keywords:

Simulation exercise, multi-agency exercise, agro-terrorism, agro-crime

S8.1

Gendered impacts of animal health emergencies

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² Georgetown University

Women are increasingly recognised as facing disproportionate impacts of human health emergencies. Yet, little is known about the gendered impacts of animal health emergencies, what drives these inequalities, and whether they are universal or more acute in particular regions. Whilst women are at the forefront of the veterinary profession in many countries, this distinction is often more emphatic among companion animal practitioners than in livestock medicine, where men often predominate. Women are also often caretakers of animals in small businesses or for backyard flocks. The International Livestock Research Institute has outlined key components of animal health research that should be gender responsive and offers. Other researchers have evaluated ways that gender and agriculture intersect (such as through the Journal of Gender, Agriculture and Food Security) and have focused on women's empowerment. What is less available are specific analyses of gender as a function of animal health emergencies. This paper considers what are these gendered effects and what practices can be put into place to support gender equitable outcomes in animal health emergencies. It does so through primary and secondary data analysis of recent animal health emergencies.

Keywords:

Gender, animal health emergencies, intersectionality, women, men

S9.1

Strategies for implementing One Welfare into emergency response

Hayley Squance

BML Consulting Limited

Responding to emergencies requires many different individuals and organisations to work well together under extraordinary circumstances. Unfortunately, the management of animal welfare in emergency situations is often disconnected from overall emergency management due to a human-centered approach, professional silos and a lack of understanding the interdependence of humans, animals, and the environment. The One Welfare concept addresses these interrelationships to facilitate a transdisciplinary approach to emergency response. Acknowledging that such a transformation change will not be easy, this presentation proposes strategies to overcome the challenges and achieve a truly integrated human-animal-environment response in emergencies.

Keywords:

Emergency response, animal welfare, one welfare, transdisciplinary, interdependencies, integration

S9.2

Veterinary Services contribution to the COVID-19 pandemic response in the Republic of Kazakhstan

Maxat Berdikulov

Committee for Veterinary Control and Supervision of the Ministry of Agriculture of the Republic of Kazakhstan

Veterinary services structure in the Republic of Kazakhstan includes two main sub divisional organizations as part of the Ministry of Agriculture, such as “Republican Veterinary Laboratory” (RVL) and “National Reference Center for Veterinary” (NRCV). Which overall consist of 2 reference centers in the main cities Astana and Almaty, 18 regional laboratories and 155 laboratories in rural districts of Kazakhstan.

The COVID-19 pandemic in Kazakhstan was part of the worldwide pandemic and first cases were confirmed in early 2020 with numbers of infected patients emerging in different regions of the country. The capacity of public health services and diagnostic centres were not fully prepared for an effective response during the pandemic rise, therefore veterinary services were involved for specialized capabilities and enablers.

To increase the capacity of COVID-19 diagnostic testing the access to 24 veterinary laboratories in 11 regions of Kazakhstan was provided to the workers of the Ministry of Health. These laboratories were equipped in accordance with the biosafety standards and allowed working with highly pathogenic materials, such as SARS-CoV-2 virus biological material and nucleic acids. From August 1st onwards, 57 veterinary laboratory specialists from RVL were involved in COVID-19 diagnostic studies. NRCV specialists were involved as mobile group on specially equipped mobile laboratory for on-site PCR diagnostic services, traveling to places where outbreaks can occur in rural districts. Moreover, 12 experienced veterinarians in PCR diagnostics of zoonotic diseases were involved, and 6 PCR equipment and supplies were allocated to 5 different regions for laboratory testing support. Overall, from both laboratories (RVL and NRCV) more than 98 veterinary specialists were trained and 67 involved in tackling the COVID-19 pandemic in 2020 in Kazakhstan.

This showed that although the pandemic has caused dramatic losses and highlighted many weaknesses of the systems involved in response and effective control of the situation, collaborative work of public health and veterinary services may improve the pandemic preparedness within and beyond public health systems.

Keywords:

COVID-19, pandemic, veterinary service, Kazakhstan

S9.3

Challenges faced by first responders

Guy Collyer

Quadrant Intelligence and Security Services, UK

The first responders to major incidents are a special breed. Highly trained in dealing with the unknown, they rush towards all manner of incidents knowing that they will have to deal with whatever they are confronted with, to the best of their ability. This presentation will give you a brief overview of the steps taken to pre plan for the unknown and the challenges faced, especially when dealing with major incidents involving biological materials. Examples will include first-hand experience of the Foot and Mouth outbreak in the UK in 2007.

Keywords:

Responders – incidents – challenges - experience

S10.1

Response to nuclear and radiological emergencies affecting animal health

Ivancho Naletoski / Gerrit J. Viljoen

International Atomic Energy Agency (IAEA)

Nuclear and radiological emergencies (NREs) can result in the release of substantial amounts of radioactive substances (radionuclides) into the environment. Through their migration in the environment, radionuclides may contaminate various commodities affecting animal production systems, thus posing a risk for food safety and security.

The International Atomic Energy Agency (IAEA) has already established standards for preparedness and response to NREs (GSR Part 7), which define the requirements for the management of NRE responses at national and local levels. Additionally, multiple international conventions emphasize the role of regional collaboration and the involvement of international organizations, such as IAEA, the Food and Agricultural Organization of the United Nations (FAO), the World Health Organization (WHO) and the World Organization for Animal Health (WOAH) in the management of NREs.

Veterinary authorities, as key stakeholders of animal production systems, have already a well-defined international structure and standards established to monitor the production processes on a daily basis (<https://www.woah.org>). These standards are aimed at ensuring food security and safety of the products of animal origin aimed for human consumption. Moreover, the standards and regulations developed and accepted by the World Organization for Animal Health (WOAH) are transferred directly or through other relevant international organizations (primarily FAO) into the national legislations of countries and are consequently implemented at national levels. These administrative acts specify the technical roles of all officially designated institutions in Member States (MS), and usually address the roles and responsibilities of the competent authorities (head veterinary offices), laboratories, field veterinary services, farmers and processing industries.

For preparedness for response to emergencies in general, there are well-established strategies at international level. For veterinary authorities, however, there is still no technical link between the IAEA standards for response to NREs and disaster management plans at international and national levels.

To address this issue, IAEA, in collaboration with recognized international experts, has published a manuscript (<https://link.springer.com/book/10.1007/978-3-662-63021-1>) which scientifically elaborates the migration of radionuclides in the environment after release and how they affect animal production systems. It also elaborates preparedness for response (decision making framework), as well as the technical management options to minimize the consequences of NREs.

Keywords:

Nuclear and radiological emergencies, Decision making framework for nuclear and radiological emergencies, Management options for nuclear and radiological emergencies, Animal production systems

S10.2

A regional response to a volcanic disaster occurring, the experience of CaribVET

Jennifer Pradel

CaribVET

The Caribbean is subject to natural hazards and being on the front line of climate change related events, frequently experiences significant impacts to its the agricultural sector and food security.

In April 2021, the volcano of Saint Vincent and the Grenadines (SVG) erupted. Several subsequent explosions occurred, releasing massive amounts of ash that severely affected the entire nation. The disaster was further compounded by heavy rainfall which contributed to the formation of dangerous lahars. An estimated 9,000 animals (mainly food producing livestock and companion animals) needed evacuation from the high risk areas. The ash-fall contaminated water and vegetation also lead to animal food and water shortages across the island. Neighbouring countries at risk were subsequently impacted within hours of the major eruption.

In the midst of the COVID-19 pandemic the regional veterinary community spontaneously organised as first responders to support SVG. Within two days after the first explosion, multisectoral groups from several countries/territories organized an outstanding collaborative and well-coordinated response, leading to an unprecedented mobilisation beyond the veterinary sector. The result was the successful shipment of priority supplies including thousands of gallons of water, tons of animal feed and veterinary and human medications to SVG.

An experience feedback has been organised to analyse the conditions for success and the key lessons learned to improve both national and regional preparedness for subsequent disasters.

Success can be attributed to several factors including the development of an enabling environment/strategy, and a decade of networking which engendered trust, solidarity and mutual knowledge. Significant, however, was the particularly efficient information sharing mechanisms which allowed many persons who did not know one another to coordinate their actions so that: i) priority needs were shared efficiently; ii) basic communication mechanisms were developed for the first response phase; iii) an active Caribbean disaster group was formed through co-optation; iv) all relevant information was centralised, easily accessible and updated almost in real time; and v) dedicated persons for both coordination and communications activities were in place.

An innovative tool to support emergency preparedness and response is being developed using this response as a model to facilitate future similar interventions.

Keywords:

Collaboration; Regional Response; preparedness; volcanic eruption; information sharing; Regional Network

S10.3

Agricultural Crime-Terrorism case study

Chris Morley¹ / Ian Jensen²

¹ Chris Morley Consulting, New Zealand

² Former Metropolitan Police, UK

Terrorists typically chose to directly target people and critical infrastructure in their attempts to inflict terror onto individuals and the public. There are limited examples of agricultural crime and terrorist activity involving trans-boundary animal diseases.

In 2010 the United Kingdom (UK) received a credible threat to release foot and mouth disease in the UK and the United States of America (USA)

Through the process of joint risk assessments between veterinary services and law enforcement and effective collaboration between law enforcement agencies in the Republic of South Africa, the UK and the USA, the risk of this threat eventuating, was effectively managed.

Following a long and detailed investigation, involving on the ground and cyber surveillance, the perpetrator was identified, apprehended, and prosecuted in early 2011 for multiple threats to severely damage the UK livestock sector. There are salient lessons that can be gained from this case, including the early involvement of law enforcement and veterinary services, joint risk/threat assessments and intelligence sharing.

Keywords:

Agricultural crime, terrorism, joint threat assessment, collaboration

S11.1

Disinformation and misinformation; a shared threat for veterinary services and law enforcement

Peter Ballantyne

Consultant

Our animal health sector today faces emerging threats from new directions – disinformation and misinformation. Misinformation is inaccurate information, usually spread without a harmful intention. Disinformation is deliberately created and spread with the intention to cause harm. Untreated, they can act like diseases, threatening lives and livelihoods, undermining trust, spreading confusion, taking up resources and causing economic and social damage. These threats are not just directed at Veterinary Services, disinformation actions especially can be criminal in nature and impact so they concern Law Enforcement agencies.

These mis and disinformation ‘epidemics’ became particularly visible during the recent COVID-19 pandemic and international agencies, governments, scientists, media and civil society groups and concerned citizens are taking actions to pinpoint, prepare for and respond to the threats.

Drawing from discussions in the WOA-FAO-INTERPOL Project on Building Resilience Against Agro-Crime and Agro-Terrorism, this contribution will highlight ways that Veterinary Services and Law Enforcement agencies are countering disinformation and misinformation through early actions to prepare, detect, and respond to such risks. These actions include deepening our awareness and understanding of the threats, inoculating ourselves to resist threats, simulating and gaming threats, using social listening and risk monitoring approaches, developing risk communication strategies and capacities, proactively pre-bunking false information, and using facts to de-bunk misinformation.

Keywords:

Risk communication; misinformation; disinformation, emergency preparedness and response

Community engagement in response to rabies

Tenzin Tenzin

World Organisation for Animal Health (WOAH)

Rabies kills around 59000 people every year in the world, mostly in Africa and Asia, and 99% of the cases originate in bites from infected dogs. The best way to eliminate rabies is to stop at its animal source—domestic dogs. By vaccinating 70% of the dog population in at-risk areas, the virus transmission cycle can be interrupted, and reduce the risk of rabies exposure to humans. It is a sustainable way to protect all populations, both animals and humans from the rabies virus. Post-exposure prophylaxis (PEP) can prevent human deaths if delivered promptly after a person is bitten by a rabid animal.

Community engagement is an essential element of the rabies control program to foster commitment and support government interventions. Community engagement ensures the identification of the rabies hotspots within the community for prioritizing interventions, improving knowledge of the dog population and registration, supporting dog vaccination campaigns to achieve high coverage of vaccination, improving rabies surveillance activities and reporting systems to the local/national authorities, and eventually taking ownership of programs. Community engagement increases public awareness of rabies, early reporting, early response, and early detection of animal bite cases, and provides rapid response to dog bite cases, thus preventing human deaths due to rabies. There are notable experiences and examples of successful community-based rabies surveillance programs in identifying additional rabies exposures and bite victims in rural Africa, Asia, and Haiti, wherein the victims are referred for appropriate medical care, averting potential human rabies deaths. The success of the community-based response to rabies outbreaks in limiting the disease spread is also well demonstrated in Africa and Asia. Therefore, the continued fight against the elimination of dog-mediated rabies by 2030 would benefit significantly by engaging communities more actively in surveillance, prevention, and control efforts. Investing in rabies at the community level will save lives, and also will create a strong resilient One Health-based health system to fight against other health threats at the animal-human-environmental interface including pandemics.

Keywords:

Rabies, Surveillance, Response, Community engagement

S11.3

Risk communication for African swine fever

Janice S. Garcia / Samuel Joseph M. Castro / Flordeliz M. Samonte

National ASF Prevention and Control Programme, Bureau of Animal Industry, Department of Agriculture, Philippines

Since the detection of the first case of African Swine Fever (ASF) in Asia in 2018, the Philippines has been vigilant in guarding its borders from the introduction of the ASF virus. The Philippine swine industry is one of the biggest contributors to the country's agricultural growth. In 2019, the country's total swine inventory was estimated to be at 12.78 million. The Philippine government through the Department of Agriculture - Bureau of Animal Industry immediately formed the ASF Task Force (ASFTF) to manage and oversee disease prevention activities including the risk communication. To capture the interest and attention of stakeholders during awareness campaign activities against the entry of the virus, the ASFTF devised an acronym of its preventive measures, highlighting the need of educating the public through strategic communication. Information, education and communication (IEC) campaigns conducted by the ASFTF include stakeholders' forum with the local veterinary authorities and frontliners, seminar with veterinary quarantine officers and inspectors of veterinary quarantine stations, TV and radio guestings, among others. Development of IEC materials in both print and videos were disseminated through social media sites, official website, and in major international airports in the country. In-flight announcements translated in several languages were also launched with airline companies. The development, printing, reproduction and dissemination was made possible by close collaboration of the BAI with industry stakeholders.

The National ASF Prevention and Control Program (NASFPCP), by virtue of Special Order issued by the Secretary of the Department of Agriculture, has developed the ASF Communication Strategy in 2021 that aims to provide direction and guidance to relevant government agencies and its stakeholders in developing their respective communication approaches, given various local contexts. The five (5) major components of the Communication Strategy include the following: understanding the Technical Elements of ASF; Risk and crisis communication; Awareness and Advocacy; Creating Networks of regional ASF communication focal persons; and Engagement of partners from industry, academe and non-government organizations. Activities and the implementation of the Communication Plan will also optimize support in capacity building and awareness campaign, one of the five (5) identified components of the ASF Prevention and Control Programme.

Keywords:

African swine fever, risk communication, communication plan

S12.1

After-action: what's next ?

livi Luuk

Ministry of the Interior, Estonia

What happens after action? Incidents and exercises are not just challenges, but opportunities to learn and improve. This presentation will focus on universally workable methods and bringing simplicity to after-action coordination in order to maximize the benefits for preparedness.

Keywords:

After-action review, evaluation, planning, interagency coordination, emergency preparedness, lessons learned

S12.2

Lessons identified from the avian influenza epidemic for emergency management

Gordon Hickman

Department for Environment, Food and Rural Affairs (DEFRA), UK

Outbreaks of highly pathogenic avian influenza (HPAI) H5N1 have been occurring at an unprecedented scale across the UK and Europe, with the virus having over-summered for the first time in 2022, with cases continuing to be confirmed into the second year of the epizootic. The risk from the Eurasian strain of H5N1 is now a global issue with outbreaks having been confirmed in North and South America and Asia.

Since October 2021, over 330 cases of avian influenza have been confirmed in poultry and captive birds in the UK with over 170 of these being confirmed since 1 October 2022. There have also been 2,500 detections in wild birds. During this time over 8million poultry and captive birds have died or been culled to control the disease.

The scale and duration of the outbreak has had a significant impact on the poultry sector, private vets and government veterinary resources.

The UK adopts an integrated emergency management approach to preparing for and responding to disease threats such as HPAI and high impact threats such as foot and mouth disease and African swine fever. Activities are brigaded into four themes:

Understand – all policies and mitigations are evidence based and access to expertise of the national reference laboratory, scientists, veterinarians, and epidemiologists is key.

Prevent – the paper will look at the role of horizon scanning and communication of risk and threat levels and underline the role that bird keepers have in biosecurity and disease prevention.

Detect – early detection is key and role of keepers and private veterinarians in that. Timely investigations and access to couriers and rapid diagnostic testing capability and capacity.

Respond – the importance of planning and exercising in advance of an outbreak and the need for transparent decision-making structures and processes, resilience, and the importance of management information and communication up, down, within and externally.

The presentation will review the response against these four themes, set out the mitigations used and outline the key lessons identified both in terms of what went well and where changes have been or will be made in the future, focussing on the emergency management response.

S12.3

ASF in China: Current Status, Control Measures and Experience

Gongmin Wang

Ministry of Agriculture of the People, People's Republic of China

African swine fever (ASF) is a highly contagious swine disease caused by African swine fever virus (ASFV). ASF severely threatens the global pig industry and leads to significant economic losses in many countries around the world. Currently, there is no commercial vaccine or cure available in the world. In August 2018, the first ASF outbreak caused by Georgia-07-like genotype II ASFV in China was reported, and soon after the disease rapidly spread to most provinces or regions across the country, resulting in considerable socioeconomic losses and pig population reduction throughout the country, despite enormous efforts was made to control the disease. As the biggest pig breeder and pork consumer in the world, China suffered and endured the damages and other impacts brought by this devastating swine disease over the past four years. Although Genotype II ASFV has dominantly been prevalent in China, genotype I ASFVs with low virulence and efficient transmissibility emerged in China in 2021, causing chronic and persistent infections in pigs, as well as more difficulties and challenges for the early diagnosis and control of the disease.

To better understand the ASFV biologic characteristics and genetic evolution, and to explore efficient control measures for ASF preventing and controlling, different strategies and means were launch and implemented in China, including but not limited to basic research, epidemiological surveillance and analysis, diagnostic technology, vaccine and reference material development, etc. In addition, various actions were taken to combat the disease, such as risk analysis and management, biosafety management, contingency response, pig movement restriction, precision culling practice, supporting policy formulation, public awareness education, elimination and ASF-free compartmentalization, national and international cooperation, so on and so forth. All the powerful and immediate measures and efforts made by the central and local governments, stakeholders, relevant organizations and institutions, contributed to the efficient and effective prevention and well control of ASF, as evidenced by the remarkable decline of ASF epidemic numbers. The experience and lessons learned in ASF prevention and control campaigns in China provides valuable reference, bring benefits and contributes to the ASF control of other WOA member countries.

Parallel Workshops

- 1** **Monday 3 April / 14:00-15.30**
Integrating foresight into emergency management **51**
- 2** **Monday 3 April / 16.00-18.00**
Roles and responsibilities of Law Enforcement and Veterinary Services in response to a deliberate biological event **52**
- 3** **Tuesday 4 April / 14.00-15.30**
Advocacy for biosecurity preparedness to parliamentarians **53**
- 4** **Tuesday 4 April / 16.00-17.00**
Opportunities and challenges of building capacities for emergency veterinary workforce. Interactive discussion with WOA and its collaborating centres' networks **54**
- 5** **Wednesday 5 April / 10.45-12.00**
Workshop on Simulation Exercises : How to plan, deliver and evaluate a multi-agency simulation exercises **55**
- 6** **Wednesday 5 April / 13.30-14.45**
Interactive demonstration : EBO-SURSY 'Alerte' Game for Surveillance in Wildlife **56**

PW1

Integrating foresight into emergency management

Monday 3 April / 14:00-15.30

Chairs: Tianna Brand¹ / Donna Dupont²

¹ *World Organization for Animal Health*

² *Purple Compass*

This interactive 90-minute workshop will provide an opportunity for participants to engage with 'foresight' scenarios to explore potential future emergency management operating environments with a focus on agro-crime and agro-terrorism. These scenarios are designed to facilitate strategic conversations about change and uncertainty, by exploring emerging issues just over the horizon. This session will seek to challenge the status quo and assumptions about the future of emergency management. Participant insights and ideas will be captured to outline potential future opportunities for policy, innovation and/or investment in emergency management capabilities to support adaptive capacity, and ensure the field remains fit for purpose moving into the future.

PW2

Roles and responsibilities of Law Enforcement and Veterinary Services in response to a deliberate biological event

Monday 3 April / 16.00-18.00

Chairs: Flavie Vial¹ / Fanny Ewann²

¹ Animal and Plant Health Agency (APHA),

² INTERPOL

Speakers: Frederic Poudevigne³ / Jimmy Tickel⁴ / Meyir Zieka⁵ /
Stephen Goldsmith⁶

³ Food and Agriculture Organization for the United Nations

⁴ Institute for Infectious Animal Diseases

⁵ Wildlife Division, Forestry Commission

⁶ Federal Bureau of Investigations

A wide range of crimes can contribute to disease spread, whether accidentally or intentionally, among wildlife, livestock and domestic animals. In this workshop, we will discuss how veterinary services and law enforcement need to work together to prevent, prepare and respond in a common approach to protect the public in the event of a deliberate biological incident. We will exchange on the existing good practices and challenges to sharing information, establishing common procedures and coordinating joint responses, with a view to feed a roadmap to enhance collaboration between the two sectors in animal disease emergency management.

PW3

Advocacy for biosecurity preparedness to parliamentarians

Tuesday 4 April / 14:00-15.30

Chairs: Wilmot James¹ / Eloise Todd²

¹ Brown University

² Pandemic Action Network

Emergencies are increasing in frequency, complexity and severity. As biological threats from nature or from deliberate release of biological agents increase, so the role of Veterinary Services is also set to increase. By showcasing innovative approaches to advocacy, partnerships and communications, this session will share good practices, engage participants in active discussion and inspire WOAHP Delegates to go home and take action. This session prepares WOAHP Delegates for the kind of work they are likely to be involved in during the months and years ahead – communicating with non-experts to make the case for investing in animal health and advocating to decision makers with the power to decide budgets. Led by former Parliamentarian and leader in pandemic preparedness and biosecurity research Wilmot James will be joined by experts to share their experiences on how to advocate successfully for WOAHP's Delegates to apply in their current – and future – work. The session will be full of helpful insights and tips from those that have been making change happen for campaigns, causes and in Parliaments for decades.

PW4

Opportunities and challenges of building capacities for emergency veterinary workforce. Interactive discussion with WOA and its collaborating centers' networks

Tuesday 4 April / 16.00-17.00

Chairs: Barbara Alessandrini

World Organisation for Animal Health

The availability of competent veterinary workforce is critical to manage emergencies that threaten human, animal, and environment health and require collaboration across multiple disciplines, sectors, authorities.

Competency-based training of the emergency veterinary workforce is essential to assure that all professionals involved master the necessary abilities. Therefore, the design of an appropriate competency-based framework, the development of quality resources for learning, and the achievement of a target audience based across all Regions are essential factors to improve capacities that may impact on prevention, preparedness, response and recovery performances of Veterinary Services.

During this interactive workshop, WOA and its Collaborating Centres for Emergency Management (organized into the EmVetNet) and for Veterinary Training and Education, want to discuss with the participating audience, opportunities and threads that can respectively represent enabling and blocking factors for a sustainable development of emergency veterinary workforce.

PW5

Workshop on Simulation Exercises: How to plan, deliver and evaluate a multi-agency simulation exercises

Wednesday 5 April / 10.45-12.00

Chairs: Gary Vroegindewey

Lincoln Memorial University

Speakers: Daniel Donachie¹ / Christine Uhlenhaut² / Julio Carvalho³

¹ *World Organisation for Animal Health*

² *United Nations Office for Disarmament Affairs*

³ *Portuguese Army*

This workshop will examine conducting and participating in simulation exercises for Veterinary Services from tabletop to full-scale exercises. Resources available including the WOAHP Guidelines for Simulation Exercises will be discussed. The execution and evaluation of two exercises, the UN Secretary General Mechanism Capstone Exercise and Portugal's CELULEX Exercise will be presented as examples. A short presentation on how to get started with simulation exercises and to engage with interagency and public stakeholders will be given followed by a question and answer session to discuss specific opportunities for you and your organisation.

PW6

Interactive demonstration : EBO-SURSY 'Alerte' Game for Surveillance in Wildlife

Wednesday 5 April / 13.30-14.45

Chairs: Sophie Muset¹ / Marie-Marie Olive²

¹ World Organisation for Animal Health

² CIRAD

Alert Game Workshop: Let's play!

An educational board game called 'ALERT', was developed as part of the EBO-SURSY Project, which aims to reinforce in-country capacity for the surveillance for viral haemorrhagic fevers (VHF) in West and Central Africa.

As a collaborative gaming experience, players work together to construct the correct chain of disease alerts and response for a VHF outbreak. For example, a player must decide who to notify when a hunter finds a suspicious animal carcass in the forest, and where to place this card in relation to others already on the board. Discussion and debate amongst players is key, for winning the game and thus stopping the outbreak, and also for building confidence in each participant to recognize their role in the chain of surveillance.

The game hopes to increase the knowledge of VHF spill overs in communities living near or in national parks and forested areas. Additionally, the game targets professionals working at the human-animal-environment interface, such as veterinarians and wildlife authorities, and students from animal and human health sectors. When individuals better understand their role in the surveillance systems, they feel more empowered to recognize and report animal diseases or unusual animal occurrences to the proper health authorities.

Like the 150+ professionals before you, team up and fight the outbreak!

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P01

Veterinary behavioural health issues associated with disaster response

Dr Gary Vroegindewey / Kimberley Kertis

Lincoln Memorial University

Emergencies and disasters create stressful situations that can exacerbate ongoing behavioural health issues. Veterinarians have been identified as a professional group at elevated risk for behavioural health issues when they are involved with an emergency response. Prior studies looking at transboundary animal disease disaster management demonstrate the significant and long-lasting mental health effects experienced by veterinary responders. To examine the scale and scope of behavioural health issues exhibited by veterinary responders, an online and anonymous survey was conducted with veterinarians who had participated in events in the Asia-Pacific, Africa, Europe, Latin America and North America regions. The results of the survey showed that behavioural health issues were reported by 51 per cent of respondents during and up to 6 months after the disaster. Behavioural health issues reported included loss of sleep, anxiety, difficulty with personal and professional relationships, mood swings, depression, nightmares and flashbacks and suicidal thoughts. The scope and magnitude of veterinarians with behavioural health issues associated with disasters underscores the need for guidelines, standards, education, training and further research in this area.

POSTER 01

P02

An animal field triage protocol for livestock and horses caught in disasters

Anne Dubbink / Jolianne Rijks / Derek van Dongen / Joris Wijnker

VPH Consultancy

Field triage systems are available to address mass casualty incidents involving humans, but lack for animals caught in disasters. This study aimed to develop a veterinary field triage protocol for livestock, horses and wildlife based on an existing human triage system. A literature review and an expert consultation resulted in a concept version, which was followed by a two-round Delphi-study to evaluate and validate the concept triage protocol. The human SALT triage algorithm was chosen as the starting point of the veterinary model because of its recent development, fair accuracy and the inclusion of an initial global sorting step. For livestock and horses, consensus was reached on the use of global sorting based on the criteria 'autonomously mobile without obvious major injuries', and on five of six appropriate physiological criteria applied for individual health state assessment. Triage animals were placed in one of four categories for applicable veterinary care, beyond saving (black), immediate/urgent (red), delayed (yellow) and minor (green). The expert panel agreed that the veterinary triage model is probably workable for livestock and horses and has added value in mass casualty incidents involving animals. Future work will focus on validating the protocol for livestock and horses with first responders during simulated mass casualty incidents and development of applicable protocols for wildlife. A serious game, the animal triage training game (ATTG), will be launched shortly, which can be used for further validation and training of the developed protocol.

Monitoring pandemic prevention, preparedness and response

Matthew Stone

Global Preparedness Monitoring Board (GPMB)

The Global Preparedness Monitoring Board (GPMB) is an independent monitoring and accountability body established by World Health Organisation and the World Bank in 2018 to develop a global health crises preparedness monitoring framework that will provide a single, authoritative roadmap for global preparedness. Since 2019 the GPMB has released annual reports highlighting risks and making recommendations for improvements. The GPMB has proposed a multisectoral framework for monitoring health emergency preparedness and response based on a comprehensive understanding of contributing factors learned during COVID-19 and summarised in numerous commissioned reports and inquiries.

The GPMB Monitoring Framework constitutes an agreed set of indicators that provide a multisectoral, whole-of-society assessment of the global health emergency ecosystem, using a forward-looking, risk-based approach, and grounded in the principles of equity; solidarity, inclusivity, and reciprocity; accountability and transparency; sustainability; and action. The Framework complements rather than replaces tools that monitor country-level preparedness, like the International Health Regulations Self-Assessment Annual Reporting Tool or the Global Health Security Index. The high-level structure includes indicators of risk, preparedness and resilience, and impact, at global and regional levels.

The GPMB's work feeds into the United Nations High Level Meeting on Pandemic Preparedness and Response and the parallel development of the Pandemic Accord, to ensure systems and responsibilities for independent monitoring are defined and embedded in the international architecture with financial support.

P04

Emergency response planning with the Livestock Emergency Guidelines and Standards (LEGS)

**Cathy Watson / Suzan Bishop / Jonathan Hamrell / Joseph Tritschler /
Leslie Brooks / Christine C. Jost**

USAID

Global trends, such as climate change, human and animal pandemics, environmental degradation, and conflict and displacement all have an impact on livestock keepers, for whom animals are a crucial livelihood asset. Severe drought in the Horn of Africa, extensive flooding in Pakistan and South Sudan, intractable conflict in Yemen, and the recent earthquakes in Turkey and Syria illustrate the need for appropriate and timely emergency response to support livestock livelihoods, drawing on evidence-based guidance.

The Livestock Emergency Guidelines and Standards (LEGS) are internationally recognized standards and guidelines for the assessment, design, implementation and evaluation of livestock interventions to assist people affected by humanitarian crises, based on global good practice. LEGS provides technical standards for six key livestock interventions in emergency contexts: feed, water, veterinary support, shelter, livestock offtake and provision of livestock. The LEGS approach works through the emergency response cycle – from preparedness through assessment, response identification, implementation and recovery, supported by monitoring and evaluation. LEGS participatory planning tools provide innovative ways to develop and implement livestock-based emergency response. The 3rd edition of the LEGS Handbook will be published in May 2023, following an extensive consultation process with users.

LEGS is increasingly recognized and used as a reference by a growing range of institutions and donors, including BHA and many international and national NGOs. The LEGS Training Program has reached over 11,000 practitioners across the world and its online and in-person courses continue to be in high demand.

IFAW response to the war in Ukraine

Maryna Ergmelidzer

International Fund for Animal Welfare

> EMERGENCY RESPONSE

Over 16 days after beginning of the war in Ukraine the first IFAW rescue team left for Ukraine-Poland border.

- **«Blue tent» at Medyka border, 12 March – 14 May 2022,**
 - 43 responders in total have deployed.
 - **animal services provided:** basic health check by vets, pet food in small quantities easy to carry, carriers, leashes, harnesses, bowls, collars, muzzles, coats, etc.
 - **2 425** animals helped over 2 months.
- **Vet post at Przemyśl train station, 27 March–30 June 2022**
 - 2 Ukrainian vets / 24h shift
 - **animal services provided:** support Polish vet authorities, vaccinate against rabies, microchipping, document pets entering in the EU.
 - **3 355** animals helped over 3 months.

> BROADEN MULTISECTORAL NETWORKS

- **IFAW-USAVA project 'Protect your pet' (until March 2023)**
Free vaccinations and microchipping of 20 000 pets and sterilization of 4 000 pets
- **IFAW-Red Cross of Mykolaiv Region (until June 2023)**
Support to the basic needs of 1 350 animals and pet owners with destroyed accommodation in Mykolaiv region
- **IFAW-Nova Ukraine (until June 2023)**
270 000 meals to be distributed to animals, veterinary care or sheltering in winter to animals and their owners affected by the war

> RESCUE OF EXOTIC PETS AT RISKS

- Feeding, vet care, logistics when wild animals in need and at risk:
5 big cat cubs rescued from the exotic pet trade in war-torn Ukraine and transported to their forever homes in the USA and France

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

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

In Italy, the SimEx exercise was conducted in May 2022 divided in three different subgroups, each one coordinated by an OHEJP partner (IZSLER, IZSAM, ISS), at three different venues in Brescia, Teramo and Roma. The scenario was adapted to the Italian context and National Health System (NHS) organisation, fully translated into Italian and integrated with original supplementary documents to provide trainees with a common background knowledge. A total of 40 participants, NHS employees at Local, Regional and National level, with expertise in FS (n. 25), PH (n. 16) and AH (n. 4), attended the Italian SimEx.

All groups agreed on the importance of simulation trainings in "peacetime" in preparation for effective response, better understanding of roles and responsibilities and highlighted the additional value of the One Health's approach to the inter-sectoral cooperation. Traceability through the "FoodChain-Lab" tool was favourably evaluated for the improvement in source tracking and hypothesis generation. Identified needs were the implementation of "One Health" digital platforms for data sharing and communication strategies procedures. The post-exercise survey revealed highly positive feedbacks on the SimEx training.

P07

Strengthening Libya's national and transboundary preparedness and response mechanisms to highly pathogenic avian influenza through multisectoral One Health systems assessments

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Timely information sharing and effective multisectoral coordination are paramount to rapidly addressing disease threats that span across borders. The global spread of highly pathogenic avian influenza (HPAI) demonstrates the imperativeness of bolstering not only national and subnational readiness but also developing shared strategies and coordinated solutions for transboundary preparedness and response. In Libya, public and veterinary health systems are weakened from recurrent conflict and political instability. This project aims to determine how existing frameworks may be leveraged to build resilient One Health preparedness and response mechanisms to shared risks.

In partnership with the Libyan National Centre for Disease Control and the National Centre for Animal Health, we used the One Health Systems Assessment for Priority Zoonoses (OH-SAPZ) tool to prioritize zoonoses and map existing laboratory and surveillance networks in Libya. Next, we adapted the methodology from a national prioritization tool for application to a transboundary setting. We assessed Libya's detection, surveillance and response capacities at the local, regional, and national levels, and at land border crossings with Tunisia.

Systems map schematics were developed for the priority zoonoses to help identify strengths and weaknesses in multisectoral communication and coordination both within Libya and with Tunisia; the findings from HPAI are being presented as a case study. These assessments help identify key areas for improving detection, surveillance and response operations and support transborder emergency event management. We anticipate this project will support collaboration between Libyan and Tunisian border, public health and veterinary officials and influence both national and transboundary disease outbreak strategies.

POSTER 07

P08

Analyses of pesticides in honey, bee (*Apis mellifera*) and honeycomb in Southern Italy (Sicily) as strategies for monitoring pollution

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Colony collapse disorder (CCD) is a multifactorial syndrome that can affect bee colonies. The symptoms include the lack of dead bees of workers around the hive and the reduction of workers' honeybees even with adequate food and capped brood in colonies. Multiple stressors can cause CCD, one of the most important is neonicotinoid exposure. The presence of pesticides was investigated in bees (n=28), honeycomb (n=38), and honey (n=55) collected in Southern Italy. Bees were collected already dead and when found near the honeycomb. The investigations were conducted using a validated liquid-chromatography mass-spectrometry (LC-MS/MS) method using QuEChERS (quick, easy, cheap, effective, rugged and safe) extraction. Organochloride pesticides (OCPs), neonicotinoids and phosphate esters (OPEs) were analysed. Four samples of bees from the same colonies collected in Palermo (PA) resulted with detectable concentrations of clothianidin (1.2 ppb). The corresponding honeycomb and honey were negative to the analyses. The results showed that revealing neonicotinoids in honey and honeycomb is not a sufficient measure to understand if honeybees are exposed to pesticides.

Comparison of droplet digital PCR and quantitative real-time PCR for the detection and quantification of bacillus anthracis spores

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> INTRODUCTION

The availability of rapid and efficient methods for the detection and quantification of highly pathogenic bacteria is crucial for the prevention and the management of possible agroterrorist and bioterrorist attacks. Together with the qPCR, in the last years, a new approach named digital PCR (1), has rapidly gained importance. The aim of our study was to compare the results obtained using these two different molecular approaches to identify and quantify *Bacillus anthracis* spores, as it represents a biological agent that could be used as biological weapon.

> METHODS AND MATERIALS

B. anthracis spores quantification, after gamma irradiation inactivation, was performed by TaqMan assay to detect a highly conserved chromosomal marker for *B. anthracis*, the lambda prophage type 3 (PL3) (2), present in single copy. Real-time PCR reactions were performed in CFX96 real-time PCR System (Bio-Rad). Digital PCR reactions were performed in QX200™ Droplet Digital™ PCR System (Bio-Rad). All of the thresholds were set up manually to allow the discrimination between positive and negative droplets.

> RESULTS

The preliminary results of this study point out that dPCR has a comparable performance to qPCR in terms of quantification of *B. anthracis* spores showing the same limits of detection equivalent to 500 spores per mL (approx. 1 genomic copy/PCR reaction).

> CONCLUSIONS

Compared to qPCR, the dPCR is less expensive, highly tolerant to inhibitors and it gives an absolute estimate of concentration without need any standards for the generation of calibration curves. For these reasons it can be considered as a very useful and effective method for the diagnosis of pathogenic agents.

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Management of highly pathogenic avian influenza in the MFI department, western Cameroon region, February to April 2022: application of the compartmentation method

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> INTRODUCTION

Avian influenza is an infectious, contagious disease caused by Influenza type A viruses, it affects domestic and wild birds. In Cameroon, the virus was notified for the first time in 2006 in the Far North region on ducks from Maiduguri (Nigeria). In February 2022, a 3rd Avian Influenza epizootic was notified in the West region. Faced with this threat, a joint team was set up to contain and clean up the outbreak. The objective of this mission was to circumscribe the outbreak, to assess the extent of the disease in the Mifi department.

> METHOD

A multisectoral investigation and management mission took place from February to April 2022 for the management of the epizootic in the Mifi department. The aim was to collect and describe epidemiological information at the level of affected farms, the management and sanitation of confirmed outbreaks. In addition, the mapping of the poultry value chain in the region has been carried out in order to set up compartmentalization.

> RESULTS

A total of 14 confirmed outbreaks, 291 farms mapped and tested as part of active surveillance in 3 Mifi districts. A total of 144,334 layers affected (100% of outbreaks) with a mortality rate of 67%. Direct economic losses amounting to 111,698,350 FCFA while the economic value of poultry products tested free from disease has been estimated at 4,281,375,200 FCFA. The ratio of direct losses linked to the disease to the economic gain linked to supplying markets with poultry products tested free is around 38.9%.

> CONCLUSION

This method of compartmentalization was carried out for the first time in Cameroon as in other European countries. The compartmentalization and zoning technique made it possible to continue the flow of poultry products while respecting the product testing protocol set up by LANAVET.

Ticks and tick-borne pathogens at human-domestic-wildlife interfaces in Malawi through a One Health approach

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In Africa, ticks and tick-borne diseases of livestock are responsible for severe economic losses and are potential zoonotic agents, which threaten human health. Wild animal reservoirs are often overlooked. This study aimed at investigation of tick-borne pathogens and ixodid tick diversity at human-domestic-wildlife interfaces in Malawi. A multi-sectoral network was implemented allowing a large-scale tick collection and wild animal sampling at different locations across the country. Moreover, farmers from villages neighbouring a wildlife reserve were interviewed and their animals were sampled for both ticks and blood. Drag sampling was performed to record the questing ticks on vegetation. Collected ticks were classified basing on morphological characteristics within four different genera, namely: Hyalomma, Amblyomma, Rhipicephalus (including the subgenus Boophilus) and Haemaphysalis. Smaller subsamples of ticks and blood coming from African elephants (*Loxodonta africana*), livestock and humans were subjected to molecular tests for *Babesia* spp., *Theileria* spp. and *Rickettsia* spp. A high prevalence for piroplasms was found in cattle (14/19, 73%), with *T. mutans* (8/19, 42%), and *T. velifera* (4/19, 21%) being the most prevalent microorganisms. One elephant tick was infected with *Theileria* sp. (sable). PCR disclosed positivity for *Rickettsia africae* in both elephant (3/30, 10%) and human (2/5, 40%) ticks. Questionnaires and field observations evidenced the possible circulation of other zoonoses in the study area. Overall, these results provide the first dataset on tick-borne pathogens and infestations at multi-host interfaces in Malawi.

P12

A risk-based surveillance tool to reduce African Swine fever entry risk at the farm level. Case study: Catalonia (Spain)

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The spread of African swine fever (ASF) poses a serious threat to the pig industry of Catalonia (north-eastern Spain). Due to its thousands of pig farms, frequent animal movements, dense population of wild boars, and the presence of transportation routes linking the Iberian Peninsula with the rest of Europe, this region is extremely vulnerable. With the goal of identifying subpopulations with a higher risk of ASF introduction, we developed an algorithm that employs a decision tree to categorize and score every pig farm assessing several pathways. These are: the entry of live animals of national or international origin; contamination from vehicles used to transport animals between farms, to the slaughterhouse, and collect carcasses; indirect contact with neighboring farms; and direct and indirect contact with wild boar. The algorithm's first presumption is that one farm in Catalonia has contracted ASF via one of these pathways. The application is fed on data from the demographics and management of farms, biosecurity measures, national and international movements, ASF outbreaks in Europe, and wild boar density. Risks that cannot be assessed using official data, such as entry for contaminated meat from another country, were not considered. This tool provides dynamic information in reproducible reports, maps, and databases on the risk of each farm taking into account each pathway independently and collectively. This system promotes communication between swine stakeholders and the government, helps identify subpopulations with a higher risk of introduction, and improves prevention and control against ASF.

Development of a novel diagnostic platform based on LAMP assays for the efficient detection of African and classical swine fever viruses using minimal equipment

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Classical swine fever (CSF) and African swine fever (ASF) are devastating infectious disease caused by classical swine fever virus (CSFV) and African swine fever virus (ASFV). ASFV currently represents the biggest threat to the porcine industry worldwide, with high economic impact and severe animal health and welfare concerns. Outbreaks have occurred in Europe and Asia and recently in Hispaniola, Caribbean. CSFV continues to be prevalent in many regions of the world. This work aimed to develop and validate a novel diagnostic platform based on LAMP assays for the accurate and rapid detection of these two infectious agents. Isothermal PCR techniques, such as LAMP, have become increasingly attractive as point-of-care diagnostic tools given the minimal material expense, equipment, and training required. Two LAMP primer sets for ASFV and CSFV, were designed and validated. Both primer sets showed thermal stability, amplifying the ASFV or CSFV target genome at temperatures between 60-70°C using both fluorometric and colorimetric methods. The selected primers did not yield false positive or cross-reactive results with other common swine pathogens. Panels from diverse types of samples collected from pigs experimentally infected with ASFV or CSFV were used in the validation of the assay, in which the reference techniques accredited by the WOA for the molecular diagnosis of these viruses were used. The results show that both LAMP tests would be a useful tool for rapid, highly sensitive and on-site ASF and CSF diagnostic and will easily transfer to other laboratories, improving the diagnostic capacity for both diseases.

P14

African Swine fever (ASF) emergency preparedness in Puerto Rico (PR)

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Due to the proximity of PR to Hispaniola, the detection of ASF in the Dominican Republic encouraged many agencies across PR to revisit their animal health emergency preparedness plans, including USDA-APHIS-VS. VS has always had a strong history of working across sectors to jointly prepare for and respond to all hazards, and the rapid collaboration with other agencies and partners since the detection of ASF in Hispaniola demonstrated the effectiveness of this approach. Some agencies involved in strengthening PR's current animal health emergency preparedness efforts since July 2021 include APHIS-Veterinary Services Field Operations and National Veterinary Stockpile, APHIS-Plant Protection and Quarantine, APHIS-Wildlife Services, U.S. Customs and Border Protection, Environmental Protection Agency, USDA-Natural Resources Conservation Service. This multi-sectoral and all-hazards approach has proven to be the only way to ensure a strong emergency preparedness strategy versus agencies working in silos and duplicating work efforts without proper communication and coherence. Some examples of the impact of using this approach include procuring equipment specifically for a swine disease outbreak across the island to aid in facilitating depopulation and disposal, and better understanding realistic disposal options of infected carcasses on an island. The emergency preparedness efforts are ongoing and grow stronger as the multiple sectors continue working together and bridging gaps in knowledge and resources.

WOAH Emergency Preparedness and Response (EPR) assessment tool

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> BACKGROUND

The need to strengthen health systems to counter emerging threats has never been more convincing. Veterinary services are recognised as a global public good and a key component in delivering sustainable, cross-sectoral One Health for the promotion of human health and well-being.

The World Organisation of Animal Health (WOAH) has long taken the lead in strengthening national Veterinary Services (VS) with the implementation of its Performance of Veterinary Services (PVS) program. The multi-faceted PVS program takes an initial broad approach by undertaking a PVS Evaluation that assesses the competencies and compliance of the national VS against WOAHA international standards.

> METHODOLOGY

Here we develop a new Emergency Preparedness and Response Assessment Tool (EPR) methodology that adopts the same approach as the PVS Evaluation by defining Emergency Critical Competencies (ECCs) each with five Levels of Advancement (LoAs), allocated across three Fundamental Components. This approach has been well accepted and validated in its application in PVS Evaluations. In the EPR the three Fundamental Components are 'Policies and Governance' (PG), Planning and Resources (PR) and Operations (OP) and twenty ECC's .

> FINDINGS

We undertook a pilot assessment of the national VS capacities of country X in 2021- 2022, the concept of the EPR was shared and guidelines were given on the types of materials and information that should be provided to enable assessment of the LoAs of three fundamental components focusing on twenty ECC's . The VS provided extensive materials and a number of online consultations were held. In addition an in-country workshop provided an excellent forum for consideration of the benefits, limitations, and opportunities of the EPR approach. The feedback on the content, logic of the EPR tool and its application and usefulness was also collated.

> NEXT STEPS

After this pilot assessment, the EPR tool will be tested in other interested countries in Southeast Asia. Furthermore, the tool can be examined for scalability to other regions. With the success of its future implementation in other countries, EPR tool could be officially considered as PVS-EPR assessment tool similar to other specialised tool.

P16

Control effort by Peru against the tilapia lake virus (TiLV)

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The National Fishery Health Agency (SANIPES)

The National Fishery Health Agency (SANIPES) reported the presence of Tilapia Lake Virus (TiLV) in February 2018, causing a 40% loss in production. In light of this, SANIPES prioritized actions, in order to identify risk and protection factors to mitigate TiLV.

The control measures applied, such as disinfection of production units (-0.730) and fomites (-0.417), are considered protective factors against the virus, because they presented a negative correlation with the presence of TiLV in the hatcheries evaluated between June 2021-February 2022. On the other hand, in the production centers evaluated, the presence of TiLV presented a positive correlation with mortality (0.589) and positive antecedents in the supplier hatcheries (0.124), constituting risk factors for TiLV.

SANIPES implemented specific surveillance at three diagnostic levels: i) Macroscopic lesions and behavior, ii) Histopathology and iii) Molecular diagnosis, to differentiate infection from TiLV disease, obtaining a prevalence of 1.8% in 2021 in the department of San Martín, compared to 2018 with a higher prevalence of 5.18%. This prevalence was observed during the dry season, possibly due to the stress generated by the alteration of the physicochemical parameters of the culture water.

Although TiLV is already an endemic disease in the country, the implementation of control strategies has a positive impact on the recovery of aquaculture activity, which should include the participation of operators and the health authority.

P17

Laboratory twinning supports animal health laboratories in WOAHA Member Countries

Marianna Marrana

World Organisation for Animal Health (WOAH)

Animal health is interconnected with human and ecosystem health in countless ways. Yet, there is often disconnect in health management across these populations and systems. Disease surveillance, prevention and control must be supported by well-functioning laboratory networks. Veterinary laboratories are crucial for safeguarding animal and public health. However, access to laboratory expertise has an uneven global distribution. The World Organisation for Animal Health (WOAH, founded as OIE) launched the Laboratory Twinning Programme in 2006 to improve access to veterinary laboratory expertise. The paper presents data from the WOAH Laboratory Twinning Programme to describe its implementation since 2006. It characterises the distribution of projects, the financial investment made in different regions and countries, the main topics of interest, and the reach of the Programme in relation to the global distribution of livestock. Among more than 100 projects initiated under the Programme, the majority took place in Africa and in Asia, which were the regions prioritized WOAH for twinning implementation. The topics that have generated the most interest from twinning candidates have ranged from avian influenza, to rabies, and to viral haemorrhagic fevers, and have shifted over time in accordance with national interests and with the global health situation, as well as donor interests. Understanding the long-term impact of twinning in supporting laboratory capacity and animal disease surveillance in beneficiary countries alongside with the sustainability of the capacities acquired by twinning candidates requires a systematic monitoring and evaluation (M&E) of individual projects against a common framework. An evaluation of the Programme is underway and will result in the development of a tailored M&E tool.

P18

Fortifying institutional resilience against biological threats (FIRABioT) project

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World Organisation for Animal Health (WOAH)

Recent events of international concern, such as COVID-19 and African swine fever outbreaks, have exposed gaps and vulnerabilities in emergency preparedness and response of the international community to all hazards, including to events arising from crime and terrorism. WOAH recognises these challenges and aims to support activities to fill these gaps. Thanks to funding from Global Affairs Canada's Weapons Threat Reduction Program, WOAH has begun the implementation of a Project to Fortify Institutional Resilience against Biological Threats (FIRABioT). This project will cover multiple workstreams including building capacity within the Organisation to respond to events of a deliberate or accidental nature. Another workstream aims to support WOAH Members in Africa to improve their capacity to respond to emergencies, especially those related to deliberate events. This is focused on four principal areas of interest: Disease Intelligence, Sustainable Laboratories, Emergency Management, and Veterinary Legislation. This project also aligns with the Signature Initiative to Mitigate Deliberate Biological Threats in Africa, led by the Global Partnership against the Spread of Weapons and Materials of Mass Destruction (GP), a G7 led international initiative. Throughout the project, WOAH will continue to work closely with its partners and Members.

P19

SARS-CoV-2 emergence in animals. The role of the World Organisation for Animal Health (WOAH) in preparedness and official reporting of disease occurrence, to inform risk management and risk communication

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Current data suggest that SARS-CoV-2 emerged from an animal source. However, to date, there is insufficient scientific evidence to identify the source of SARS-CoV-2 or to explain the original route of transmission to humans. A wide range of mammalian species has been shown to be susceptible to the virus through experimental infection, and in natural environments when in contact with infected humans. The main objective of this work is to provide a summary of the official data shared by countries on SARS-Cov-2 in animals with the World Organisation for Animal Health (WOAH), to highlight the role of WOAH as an international organisation in coordinating scientific information actions and to discuss the implications and impact of these activities, including how this information can be used to inform risk management and risk communication.

Between January 2020 and December 2022, 36 countries in Europe, the Americas, Asia, and Africa officially reported SARS-Cov-2 identification in 26 animal species. Affected countries were generally responsive in confirming the pathogen (median of 5 days after onset) and reporting to WOAH (median of 7 days after confirmation). During the pandemic, WOAH, supported by its network of experts, played a crucial role in collecting, analysing, and disseminating veterinary scientific information, acting as the reference organisation on these issues, thus avoiding misinformation and disinformation. Data collected by WOAH on the occurrence of SARS-CoV-2 in animals, have been used as reference information also by other agencies, mainly in the context of public health. Future perspectives to avoid new emerging threats are discussed.

P20

The Food and Agriculture Organization of the United Nations (FAO) Emergency Management Centre (EMC)

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Food and Agriculture Organization of the United Nations (FAO)

Emergencies in the agri-food sector and other related sectors are evolving. This can impact animal health, fisheries, plant health and food safety, as well as wildlife, forestry and environment, and can be triggered by all types of hazards. These emergencies can have a long-term disastrous impact. The FAO EMC provides support to countries and regions facing such emergencies, ensuring maximum impact by operating under four pillars, namely Preparedness, Response, Coordination, and Resource mobilization. Under those pillars, EMC takes a bottom-up approach, working with regions to apply tools such as the Preparedness Pathway for Emergency Preparedness (PPEP), the results of which help to identify critical areas for improvement, and offering training in Good Emergency Management Practice (GEMP), including the recently added of a bio-threats module. Under Response, EMC responds to requests for support by deploying emergency missions, compiling teams of experts from around the world to match the needs of countries facing outbreaks. EMC brings together relevant partners to coordinate support in collaboration with existing mechanisms through its Incident Coordination Groups (ICGs), like the regional Highly Pathogenic Avian Influenza ICG for Latin America, the sub-regional Foot-and-Mouth Disease ICG for the Near East, and the ICG dedicated to supporting animal health authorities in Ukraine. Recently, EMC has expanded its scope of action, going beyond animal health to adapt its tools and extend its expertise to sectors such as bio-threats and plant health. The Centre looks forward to extending its emergency management support to meet growing needs through strengthened partnerships.

P21

L-LIVE: An innovative tool to protect livelihoods and livestock impacted by volcanic events

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Livelihoods and Livestock Impacted by Volcanic Events (L-LIVE) is a regional risk management tool to assist communities and local governments in mitigating volcanic impacts on livestock livelihoods in East Asia and the Pacific. Taking into consideration emergency preparedness, crisis management, and recovery, the tool can be used to assist governments, non-governmental organizations, public international organizations, the private sector, and local communities to support livestock related livelihoods before, during, and after volcanic eruptions. L-LIVE incorporates (1) descriptions of volcanic events, (2) an evaluation of volcanic eruption impacts on livelihoods and livestock, (3) disaster management principles, (4) preparedness in volcanic risk areas, (5) the Livestock Emergency Guidelines and Standards, (6) a four-step L-LIVE early response plan, (7) post-disaster recovery, and (8) disaster risk reduction in a manual to facilitate integrating livestock into preparedness and response plans for volcanic emergencies.

Funded by USAID's Bureau for Humanitarian Assistance, the United Nations' Food and Agriculture Organization designed the tool based on case studies in Indonesia and the Philippines, as well as technical consultations. Built using a bottom-up, community-driven approach, L-LIVE integrates best practices, guidelines, and standards that can be consulted and utilized by many different practitioners. The tool was tested via training and simulation exercises in two national workshops, bringing together volcanologists, practitioners of national disaster management, agriculture, and livestock. While L-LIVE is currently only applicable to Asia and the Pacific, there are plans to further test and refine it to be useful in other regions as well.

P22

A module to assess laboratory capacities for the investigation of agro-terrorism and agro-crime animal health events

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The pace of global scientific development, the dual use of biological materials and technologies, combined with the stated aim of terrorist groups to launch biological attacks, contribute to threats to national and international security. Veterinary Services are expected to play a key role in animal health events, whether natural, related to a law violation or intentional. The contingency plan includes the availability of adequate and ready-to-respond laboratory capacities by type of event and the required expertise. Laboratories holding pathogens, toxins or dangerous chemicals can become a target for malicious individuals and security has become important for laboratory operations, requiring the implementation of strict biosafety and biosecurity standards, including a cyber-security system. The FAO Laboratory Mapping Tool-Bio-threat module (LMT-BT) specifically assesses laboratory capabilities to support the prevention of and response to an agro-terrorist or agro-criminal act affecting animal health and production. This module was developed under the project “Building resilience against agro-terrorism and agro-crime affecting animal health” supported by the Weapons Threat Reduction Program of Global Affairs Canada (GAC). The FAO LMT modules are a standardized family of tools for conducting a semi-quantitative assessment of laboratory capabilities and capacities. The tool generates a profile, maps the laboratory, and highlights strengths and weaknesses, providing a solid basis for specific and tailored recommendations. Together with the Surveillance Evaluation Tool-Biothreat (SET-BT) module, this module will help build resilience to agro-terrorist and agro-criminal threats to animal health, supporting joint veterinary and law enforcement investigations by strengthening laboratory capacities and surveillance systems at national and international levels.

Lessons learned in the assessment of national capacities to detect agro-terrorism and agro-crime events affecting animal health

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Livestock's vulnerability to agro-terrorism and agro-crime, and their potentially devastating socioeconomic and public health consequences, is a growing concern. Strong surveillance systems and collaboration between law enforcement and animal health are needed to ensure deliberate animal disease outbreaks are rapidly detected and controlled, and perpetrators are brought to justice. Under the project "Building resilience against agro-terrorism and agro-crime affecting animal health" financially supported by the Weapons Threat Reduction Program of Global Affairs Canada (GAC) WOA, FAO and INTERPOL have used FAO's Surveillance Evaluation Tool (SET) and have piloted a novel Bio-threat Detection module within SET (SET-BT) to evaluate the capacity of beneficiary countries to detect and monitor criminal or terrorist animal health events. SET has been used since 2017 to comprehensively evaluate and provide a detailed action plan to improve national animal disease surveillance systems. The tool now incorporates a Bio-threat Detection Module (SET-BT) that was piloted in Tunisia (2021) and Jordan (2022) assessing 32 indicators. Lessons learned from these pilot missions will inform the finalization of the SET-BT module. SET-BT complements other assessment tools such as the FAO Laboratory Mapping Tool Bio-threat Module (LMT-BT), and the WOA Tool for the Evaluation of the Performance of Veterinary Services (PVS), and specific capacity building tools such as the Good emergency management practice and its bio-threat module (GEMP-BT). Results from these specific assessments, have and will continue to guide resilience-building efforts against agro-terrorism and agro-crime.

P24

Improving laboratory sustainability with a Grand Challenge

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²Pirbright Institute

Diagnostic laboratories play a central role in supporting animal health and public health services. However, many laboratories around the world face barriers in maintaining their operations; these barriers undermine safety and performance and are particularly acute in low resource settings.

Identified challenges to laboratory sustainability are both technological and organisational, encompassing building design and construction; operational issues (including equipment maintenance; availability of reagents and consumables; maintaining skills and competencies of staff; policy challenges, including inadequate operating budget and lack of political support). Specific technological challenges include: interruptions to power supply; lack of, or inadequate access controls; inability to dispose safely of dangerous waste; poorly maintained or dysfunctional equipment (lack of access to spare parts or skilled engineers for certification or maintenance).

Open innovation is one way of seeking solutions to improve the sustainability of laboratories. WOA - together with the Pirbright Institute, Grand Challenges Canada, and the Science for Africa Foundation, with funding from Global Affairs Canada's Weapons Threat Reduction Program - is exploring the use of a Grand Challenge to seek innovative solutions to improve laboratory sustainability. Given the complexity and cost of running a Grand Challenge, WOA aims to de-risk the project by first carrying out a feasibility study which is underway.

Foot and mouth disease preparedness within New Zealand's Dairy sector

R. Evans / A. Sing / C. Morley

New Zealand has never experienced a foot and mouth disease (FMD) outbreak and has strict border and pre-border controls, combined with robust surveillance and biosecurity response systems. The 2022 FMD outbreak in Indonesia, a popular tourist destination for New Zealanders, was a timely reminder to review and refresh FMD preparedness plans, systems, and tools.

Biosecurity readiness and response arrangements in New Zealand rely on a partnership approach between the Ministry for Primary Industries (MPI) who are the lead agency for biosecurity emergencies, and primary sector organisations that represent different farming sectors. DairyNZ is the industry good levy organisation representing all dairy farmers in New Zealand.

A MPI established a FMD Task Force in 2022 to support a coordinated review and update of key elements of FMD preparedness, in partnership with livestock sector organisations.

To support this, DairyNZ invested in several key areas to better support readiness and emergency response, including:

- 1 / Delivery of training across the organisation in the Coordinated Incident Management System (CIMS), the New Zealand common "all-hazards" approach to emergency management,
- 2 / Development of simulation modules to run with staff from the farm level through to senior leadership; and,
- 3 / Development of farmer tools, including risk pathway maps to ensure farm systems and impacts are understood during an outbreak and an information checklist to help farmers better prepare for biosecurity emergencies, such as FMD.

Inter-sectoral cooperation by including livestock sector partners and MPI in training, simulations and development of education material was a focus for this preparedness work.

Keywords:

Foot and mouth disease, readiness and emergency response, all-hazards approach, emergency management, training, simulations, risk pathway, on-farm biosecurity, inter-sectoral cooperation.

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Building resilience against agro-crime and agro-terrorism

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COVID-19 exposed society's vulnerability to biological emergencies, including those that stem from criminal or terrorist intent. Many of the lessons learned from COVID-19 can be applied to the animal health domain, which is at risk of agro-crime and agro-terrorism. Biological threats can have important consequences on animal health and welfare, public health, economies and biodiversity. Since 2018, WOAH, FAO and INTERPOL have partnered on a project, supported by the Weapons Threat Reduction Program of Global Affairs Canada, to sustainably build resilience against animal health emergencies resulting from agro-crime and agro-terrorism. This project brings together Veterinary Services and Law Enforcement through global- and regional-level activities, with a focus on the Middle East, North Africa and Southeast Asia. Through assessment studies and tools developed by the three organisations, the project aims to identify gaps and weaknesses in emergency management and implement fit-for-purpose capacity building for Members, including through multi-sectoral workshops and simulation exercises. The project has exposed gaps in emergency management, including challenges in collaboration between Law Enforcement and Veterinary Services, and it has identified potential solutions to those challenges. The outputs of the project will inform biothreat programming and reduce the risks linked to agro-crime and agro-terrorism globally.

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The Good Emergency Management Practice – Bio-Threat Module (GEMP-BT)

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"A tool to raise awareness on the prerequisites for implementing surveillance, detection and joint response to an animal health event related to agro-criminal or agro-terrorist acts."

The deliberate or accidental introduction of pathogens targeting animal production constitutes a significant threat to many countries that may lack preparedness and response capabilities. The deliberate use of these pathogens can be described as "agro-crime" when motivated by greed and "agro-terrorism" when ideological motivations are involved. Infectious diseases can spread rapidly within a country or worldwide due to the growing concentration of human and animal populations, human and animal movements and global trade. Developed as part of the project "Building resilience against agro-crime and agro-terrorism affecting animal health" implemented with the financial support of the Weapons Threat Reduction Program of Global Affairs Canada, the GEMP Bio-Threats module (GEMP-BT) refers to the Good Emergency Management Practice-Essentials, a guide to achieving an appropriate level of preparedness and emergency management inclusive of all type of events be they caused by natural phenomenon, accidental or deliberate human action. GEMP-BT is a pedagogical tool using collaborative and reflective approaches to raise awareness of the necessary inter-agency collaboration and provides a framework for the resulting reflection. GEMP-BT uses consensual definitions of agro-crime and agro-terrorism put in place by the WOA-FAO-INTERPOL consortium and four essential components for efficient collaboration between animal health and law enforcement: i- A duly mandated multidisciplinary team; ii- an analysis of the hazards and associated risks; iii- the identification of triggers for joint investigations; iv- the necessary legal framework. GEMP-BT has been used successfully in regional workshops in North Africa and the Middle East.

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The Necessity of Promoting Wildlife Health with Public Health Interventions and the Prevention of Zoonotic Disease Transmission to Wildlife Officials

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Global wildlife trade, both legal and illegal, is an ongoing threat to health security due to the potential of zoonotic disease and the threat of new pandemics. Seventy-five percent of all emerging infectious diseases (EIDs) are zoonotic and most originate within wildlife, including, most likely, the SARS-CoV-2 pandemic. Regulation of wildlife trade presents a significant zoonotic disease risk to professionals such as customs agents, border control officers, law enforcement and veterinary medical officers. This point of interaction between humans and wildlife represents a risk for disease spillover and consequent disease spread within the human population. The risk to these professionals is compounded by the current lack of preventative education. The destruction of wildlife and habitats is detrimental to global public health as wildlife and ecosystems have an important role in maintaining human health. Public health organizations must also begin to have a better understanding of wildlife health and the role that humans play in this developing situation. To elicit a greater understanding of this complex risk landscape wildlife health should be integrated into public health objectives and interventions to promote human health. This project works toward reinforcing and furthering this goal. Through work with Dr. Keith Hamilton of the World Animal Health Organisation (WOAH), the zoonotic disease threat to wildlife officials, and consequent threat to health security, was investigated. Two public health intervention deliverables were created to improve the education and understanding of officials on the health and wellbeing of animals involved in wildlife trade and to assist in promoting disease preventative guidelines for those wildlife officials who are high risk for exposure to zoonotic diseases.





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