PREVENTING DISEASES IN WILDLIFE MANAGEMENT:
Sharing guidance and insights to support practice
Join in English, French, or Spanish

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SESSION 1

Setting the Scene
Franck Berthe
Senior Health Specialist and One Health Lead, The Pandemic Fund, World Bank
Preventing diseases in wildlife management
Drivers and the economic case for prevention

GWP Webinar
April 20th, 2023
Approximately 75 percent of emerging infectious diseases in humans have their origin in animals (domestic or wild)

• The **pace of emergence has accelerated** over the past 70 years from less than a hundred outbreaks per year until the 1980s to more than 4 hundred since 2000

• Increasing trend of **costs and economic impact**

![Graph showing the number of reported disease outbreaks from 1900 to 2020.](image)

Marani et al., 2021. PNAS


The yearly probability of occurrence of extreme epidemics can increase up to threefold in the coming decades

Even **known pathogens can mutate**, e.g., Zika mutation before the 2015 epidemic enhanced disease and transmission

Shan et al., 2020. PNAS

The next pandemic may already be on the horizon
The global economy contracted by 4.3% in 2020 due to COVID-19. That amounts to about $3.6 trillion worth of goods, services and other output lost. Projected cumulative output loss due to the pandemic (2020 to 2025) ~ $22 Trillion.

This does not include the different ways people suffered the downturn through death, illness, loss of livelihood or disruption of schooling, for example.

The economy is increasingly impacted through different sectors, e.g., tourism, transport, food, education.

Major outbreaks can reverse years of progress in development.
Crises are not inevitable, and appropriate interventions can mitigate pandemic risks, avoiding crises and containing adverse shocks.

Prevention and preparedness are critical to ex-ante risk reduction and to ultimately strengthen resilience to health emergencies.

More than 250 viruses are known to have already spilled over from animals to humans, SARS-CoV-2 being the latest known example. 1.7 million undescribed animal viruses, 50% have potential to spill over into humans and could result in a future Disease X.

PREVENTION

Systems, policies and procedures to assess, avoid, mitigate, and reduce public health threats, reduce the likelihood or consequences of spillover events at the human, animal, ecosystem interfaces.

PREPAREDNESS

Capacities and capabilities put in place at every level to prevent, detect, contain and respond to the spread of disease and other hazards, mitigating social disruptions and limiting risks to international travel and trade.

Prevention and preparedness are critical to risk reduction
Pandemic risks are mainly driven by human activities

- **Drivers lead to spillovers** and disease outbreaks, through a wide variety of mechanisms
- Coupled with **weak health systems** and public health institutions, drivers can lead to epidemics and pandemics
- **Good development** is likely to have an impact on emerging infectious diseases, reducing their pace of emergence

Reducing pandemic risks touches upon many aspects of development
Deterioration of ecosystem health augments the risk of spillovers through expanded interaction between humans or livestock with wildlife, as well as changes in reservoirs and host population dynamics.

Attention is needed on hotspots for spillovers and climate-related impacts.

Prevent habitat loss or degradation. Creating or maintaining protected areas, promoting sustainable natural resource management, and strengthening the landscape planning.

Wildlife consumption & commerce. Decreasing the local population reliance on “bushmeat”, and ensuring legal and safe commerce of wildlife.

Climate Change. Increasing the resilience of communities and natural areas to extreme weather, sustainable agriculture, restoring areas, and preventing human health spillovers as part of Nature-Based solutions.

This could be addressed by actions such as those included in the Climate Change Action Plan 21-25.
Pandemic risks and vulnerabilities are global, though unevenly distributed

Risk anywhere is risk everywhere

There are no boundaries to infectious disease epidemics, all countries are vulnerable to the impact of epidemics and spillovers

Most hotspots for emerging infectious diseases are in low- and middle-income countries, i.e., in IDA and IBRD countries

Adapted from Allen et al., 2017. Nature
A compelling economic case

- The estimated annual cost of prevention and preparedness is less than 1% of the cost of the current pandemic.

- Investing in prevention and preparedness comes with returns on investment up to 88%.

Expenditure on prevention is an investment rather than a cost.

Adapted from World Bank, 2012. People, Pathogens and the Planet.
Areas of focus for investment

Major global-level financial resources mobilized for Global Health Security (funding received or requested)

<table>
<thead>
<tr>
<th>Program</th>
<th>Year(s)</th>
<th>Funding source(s)</th>
<th>Year(s)</th>
<th>Funding level</th>
<th>Prevent</th>
<th>Detect</th>
<th>Respond</th>
<th>Recover</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEPI</td>
<td>2017-22</td>
<td>Wellcome Trust, Gates Foundation, Japan,</td>
<td>2017-22</td>
<td>$560 million (as of 2017)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vaccine development; $1 billion target for first 5 years</td>
</tr>
<tr>
<td>Contingency Fund for</td>
<td>2015–</td>
<td>WHO member contributions (17 countries have</td>
<td>2015–</td>
<td>$69 million received</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Separately funded component of the WHO Health Emergencies Program; rapid response to health emergencies; up to $500,000 mobilized within 24 hours; $21 million utilized in 2017 to 23 countries</td>
</tr>
<tr>
<td>Emergencies</td>
<td></td>
<td>contributed to date)</td>
<td></td>
<td>(as of June 2018);</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>$100 million target for 2018-19</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gavi</td>
<td>2016–20</td>
<td>Governments, Gates Foundation, private</td>
<td>2016–20</td>
<td>$7.2 billion in donor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Immunization delivery (includes health system strengthening aspects)</td>
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<tr>
<td></td>
<td></td>
<td>sector</td>
<td></td>
<td>contributions and</td>
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<td>pledges</td>
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<tr>
<td>GHSA</td>
<td>2014–22</td>
<td>17 nations</td>
<td>2014–22</td>
<td>&gt;$1.44 billion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GHSA itself does not allocate/ appropriate funds; support is allocated by countries under the principles of GHSA to advance prevent, detect, and respond capacities</td>
</tr>
<tr>
<td>Pandemic Emergency Financing</td>
<td>2017–22</td>
<td>World Bank</td>
<td>2017–22</td>
<td>$320 million (Class A pathogens: $225 million, Class B: $95 million); separate cash window</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Surge financing (insurance window + cash window) in response to activation criteria (outbreak size, spread, and growth); premiums and bonds financed by donor governments</td>
</tr>
<tr>
<td>Pandemic Preparedness Plans</td>
<td>2017–20</td>
<td>World Bank (IDA) 18 Replenishment</td>
<td>2017–20</td>
<td>Dependent on client country requests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Support to 25 IDA countries to develop frameworks for governance and institutional arrangements for multi-sectoral health emergency preparedness, response, and recovery</td>
</tr>
<tr>
<td>WHO Health Emergencies</td>
<td>2016–</td>
<td>WHO member states</td>
<td>2016–</td>
<td>$485 million requested for 2016-17 (73% funded)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Core budget for essential functions, plus an appeals budget that covers additional work in response to acute and protracted health emergencies</td>
</tr>
</tbody>
</table>

* To the extent that Gavi covers Prevent it is for the specific prevention of yellow fever spillover through vaccination in high-risk areas, does not address diseases

Existing spending on global health security is largely directed to immunization and emergency response operations – with limited spending towards pandemic prevention, surveillance and detection

Global Health Security Tracking dashboard
Katz, R. et al. (2019). EcoHealth

Prevention and preparedness have been chronically under-invested worldwide
One Health is a necessary foundation of global health security

• “Each time an outbreak was managed, attention was subsequently diverted: investments in prevention and preparedness waned, fueling the cycle of panic and neglect”

WB, From Panic and Neglect to Investing in Health Security (2017)
Catherine Machalaba
Principal Scientist for Health and Policy, EcoHealth Alliance
Preventing Diseases in Wildlife Management: Sharing Guidance and Insights to Support Practice

Catherine Machalaba PhD MPH
EcoHealth Alliance

Global Wildlife Program webinar
April 20, 2023
Definition

**One Health** is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.

One Health High-Level Expert Panel (working definition)
System Components to Reduce Disease Risk from Wildlife

<table>
<thead>
<tr>
<th>Indicator</th>
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<tbody>
<tr>
<td>Policies (such as for livestock or land use development) account for</td>
</tr>
<tr>
<td>disease risk from wildlife</td>
</tr>
<tr>
<td>Institutional mandate for managing wildlife disease/pathogen risk</td>
</tr>
<tr>
<td>Wildlife authority included in national One Health body*</td>
</tr>
<tr>
<td>Mechanism for inter-agency coordination if authority for risk</td>
</tr>
<tr>
<td>management is shared</td>
</tr>
<tr>
<td>Risk analysis process in place for assessing and managing risk at</td>
</tr>
<tr>
<td>wildlife-domestic animal and wildlife-human interfaces</td>
</tr>
<tr>
<td>Plan/strategy in place for systematic surveillance and risk reduction</td>
</tr>
<tr>
<td>Dedicated budget for wildlife disease system</td>
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<tr>
<td>Wildlife monitoring network</td>
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<tr>
<td>Access to laboratory for testing wildlife specimens</td>
</tr>
<tr>
<td>Wildlife disease database</td>
</tr>
<tr>
<td>Alert system in place for early warning and response</td>
</tr>
<tr>
<td>Pipeline for wildlife veterinary/para-veterinary workforce in non-zoo</td>
</tr>
<tr>
<td>settings</td>
</tr>
<tr>
<td>Applied field epidemiology training program for wildlife surveillance</td>
</tr>
<tr>
<td>and investigation</td>
</tr>
</tbody>
</table>
Guidelines for Working with Free-Ranging Wild Mammals in the Era of the COVID-19 Pandemic

Preventing transmission of SARS-CoV-2 from humans to wild mammals

**Exposure Risks**

- **Contact exposure**
  - Mammals coming into contact with contaminated hands or equipment

- **Aerosol exposure**
  - Infectious droplets from handlers holding mammals in close proximity

- **Environmental exposure**
  - Sharing enclosed, poorly-ventilated spaces with mammals, where virus may persist in the air or on surfaces

**Mitigation Strategies**

- **M**inimize
  - Delay, prioritize, or avoid handling mammals when possible, i.e. collect environmental samples

- **A**ssess
  - Postpone handling mammals if there is a probability that you have been exposed to SARS-CoV-2 or if you have symptoms

- **P**rotect
  - Adopt practices that reduce exposure, i.e. face covering, gloves, disinfection procedures

This figure was adapted in collaboration with the IUCN Bat Specialist group.
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## Disease Risk Interfaces

<table>
<thead>
<tr>
<th>Interface</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism</td>
<td>• Encroachment into caves&lt;br&gt;• Wildlife selfies</td>
</tr>
<tr>
<td>Communities</td>
<td>• Agriculture (e.g., livestock rearing, crops)&lt;br&gt;• Housing&lt;br&gt;• Food acquisition and food preparation</td>
</tr>
<tr>
<td>Natural resource extraction</td>
<td>• Commercial/concession-based logging, mining, and oil and gas extraction&lt;br&gt;• Guano harvest</td>
</tr>
<tr>
<td>Access and resource use</td>
<td>• Informal (e.g., artisanal) mining&lt;br&gt;• local clearing (e.g., for charcoal)&lt;br&gt;• Subsistence and non-subsistence wildlife hunting and fishing (use, trade)</td>
</tr>
<tr>
<td>Research</td>
<td>• Biological sampling and disease investigation</td>
</tr>
<tr>
<td>Biodiversity management</td>
<td>• Reintroduction/translocation&lt;br&gt;• Introduction and establishment of invasive alien species (and biological measures to control them)</td>
</tr>
</tbody>
</table>

*Wildlife do not present inherent risk for pathogen spill over!*
Healthy people and wildlife through nature protection
Guidelines for prevention, detection, response, and recovery from disease risks in and around protected and conserved areas!

One Health principles for sustainable tourism in protected and conserved areas
Accompanying principles to the guidelines for prevention, detection, response and recovery from disease risks in and around protected and conserved areas

Build risk reduction into site management plans and national strategies!
Guidance Topics

**Sound Design and Planning**
1) Disease risk assessment
2) Animal release
3) Site use planning and buffer zones

**Effective Management**
4) Monitoring and Surveillance
5) Disease reporting and investigation
6) Safe wildlife viewing, handling, and use
7) Biosafety and Biosecurity
8) Control measures

**Good Governance**
9) Risk communication
10) One Health coordination

SUCCESSFUL CONSERVATION AND HEALTH OUTCOMES

Lead to

Effective Management

Good Governance

Sound Design & Planning
Disease Risk Assessment

Most environmental impact assessments do not currently include scope on emerging disease risks

- Ensure a process is in place to conduct and utilize findings from risk assessments
- Conduct disease risk assessment prior to land and sea use, animal release, or reintroduction planning
- Review and update risk assessment
- Take action as warranted (e.g., zoning)
Risk Communication

✓ Ensure coordination with animal and public health authorities for information exchange and consistent messages

✓ Promote biodiversity-sensitive messaging

✓ Post signage on safe practices and use behavioral “nudges” to encourage uptake

✓ Include information on responsible practices to reduce disease risk in visitor codes of conduct
One Health Coordination

✓ Ensure participation in national or subnational One Health coordination platform

✓ Build partnerships to notify appropriate authorities and exchange routine information

✓ Identify and fill workforce and training needs

✓ Develop and practice plans through multi-sectoral coordination and simulation exercises
Example of One Health Solution

Safe wildlife viewing platform
Bat cave in Uganda’s Maramagambo forest
(Uganda Wildlife Authority and the US CDC)

What is the risk of pathogen spillover from a cave used for ecotourism?”

Relevant information for risk assessment (examples):
• Species present
• The type and frequency of interactions
• Pathogenicity of known and novel viruses, bacteria, fungi
• Protective factors to reduce exposure

https://www.silverbackgorillatours.com/uganda/maramagambo-forest
SESSION 2

Case studies & success stories
Dao Nguyen
Senior Programme Manager, Conservation Action, Species Conservation Action Team, IUCN
SOLUTIONS IN FOCUS:
Wildlife Health and Zoonotic Disease Risk Reduction
Wildlife rescues – building a safe bridge to recover wild populations in Vietnam

SUMMARY:
In Vietnam, there are thousands of live wild animals confiscated from illegal wildlife trade incidents, however, the majority of them could not survive after confiscation due to lack of proper treatment. Wildlife rescues are not limited to saving and taking care of animals from confiscations but also rescue and rehabilitation, release and monitoring, conservation breeding programme, capacity building, and collaboration to safely release them back to the wild, and to recover and secure wild populations. After 7 years of working, we have released more than 1200 confiscated animals back into the wild with a success rate of more than 60%, many of which were tagged and tracked post-release. Moreover, a Viet Nam Wildlife Rescue Association is going to be established to support wildlife rescue centres through the network.

SUCCESS FACTORS:
1. Wildlife rescue and rehabilitation
2. Release and monitoring
3. Building capacity for rescue centres
Hunter and Community-Based Early Warning System Expands Ebola Mortality Monitoring in Great Apes

SUMMARY:
In northern Republic of Congo, hunters and community members were recruited to report morbidity and mortality events in wild animals. In the region, great ape die-off events were found to precede human cases of Ebola virus disease. Through the community engagement programme, reporting channels were developed, relaying information from small villages to connect communities via radio. Messages carried by commercial drivers or other contact routes with national authorities. This facilitated information flow to veterinarians so that diagnostic sampling could occur within the short timeframe needed before carcasses degrade. Reporting of events expanded the surveillance system to empower local people and allowed for early warning through sentinel surveillance for possible disease threats to humans and wild animals. Accompanying community outreach also helped to raise awareness about the dangers of hunting certain species or eating animals found sick or dead, particularly in epidemic periods, thereby promoting safer practices.

SUCCESS FACTORS:
1. Early warning system
2. Stakeholder engagement and participation

Training on Disease Prevention, Detection, Response and Recovery for Protected Area Managers in Vietnam

SUMMARY:
In September 2022, a training was held in Viet Nam’s Cúc Phương National Park on the recently developed IUCN guidance for Prevention, Detection, Response and Recovery from Disease Risks in Protected and Conserved Areas and accompanying One Health Principles for Sustainable and Healthy Tourism. The training was designed for professionals, wildlife handlers and park rangers to introduce the One Health concept, IUCN guidance, sampling, human safety, risk assessment, biosafety, personal protective equipment (PPE), and biohazard waste disposal. Forty participants from various agencies in Viet Nam including Cát Tiên, Phú Quốc and Cúc Phương National Parks took part in the two-day training. The field experience and expertise of the training team and adaptation to the relevant context ensured practical application of the guidance. Sessions such as the ‘Glo Germ’ test, which demonstrated the importance of proper PPE donning and doffing and handwashing procedures, helped make the training interactive and reinforce key concepts.

Read more:
SOLUTIONS IN FOCUS:
Wildlife Health and Zoonotic Disease Risk Reduction
Dr. Kalpy Julien Coulibaly

Head of Department of Environment and Health, Pasteur Institute of Côte d'Ivoire
1) Main factors of emergence of wildlife-related diseases

• Land conversion and deforestation
  • ➔ Increases contact between wildlife and humans

• Hunting and poaching

• Misconceptions and ignorance: Animal diseases cannot be transmitted to humans
  • 1/3 of 401 people surveyed said they had eaten a sick or apparently sick animal
2) Practical examples/case studies at the national level about prevention and management of disease spread

- Côte d'Ivoire has set up the One Health platform
  - ➔ before we worked on its operationalization

- Simulation of the response to certain pandemics.
2) Practical examples/case studies at the national level about prevention and management of disease spread

- Côte d'Ivoire has set up the One Health platform
  - before we worked on its operationalization

- Simulation of the response to certain pandemics.

- Training in cross-border management of certain epidemics (CIV - Liberia)
2) Practical examples/case studies at the national level about prevention and management of disease spread

- Sharing information and raising awareness

- Lessons Learned in Dealing with the COVID Pandemic
  - Over 2,000,000 tests performed between March 2021 and December 2022
3) Wildlife management as part of national "One Health" approaches

- Train wildlife specialists
  - Few wildlife veterinarians

- Train the different sectors to cooperate according to the "One Health" approach

- Operationalize "One Health" at the national level in the framework of Wildlife Management
  - Case of Human Conflict Elephants in Côte d'Ivoire
    - DFRC IPCI Cooperation
Thank you for your attention
Francois Diaz
Scientific Coordinator for Wildlife and Bees, Preparedness and Resilience Department, Organisation on Animal Health (WOAH, founded as OIE)
Guidelines for addressing disease risks in wildlife trade

François Diaz
Scientific Coordinator for Wildlife and Bees

Global Wildlife Program - Webinar on Preventing diseases in wildlife management: Sharing guidance and insights to support practice - 20 April 2023

Thanks to Tiggy Grillo who contribute this presentation
General Background

- Wildlife provide essential ecosystem services and are a key component of overall biological diversity.
- Wildlife is also an important source of protein, income, and livelihoods for many local or rural communities, whilst also important for national and regional economies through tourism and nature-based recreation.

- Unregulated, unsustainable harvest, use, and trade of wildlife can pose threats to animal health and welfare, have detrimental impacts on species conservation and biodiversity, and can have serious public health implications (in particular zoonosis).
- Risk of pathogen spillover and disease emergence amplified by steady increase in level of interaction between humans, wildlife, and domestic animals.
Background of the Guidelines

- In April 2020, the OIE Wildlife Working Group released a statement highlighting the complexities, benefits, and challenges of wildlife trade.
- End of 2020-Early in 2021, development of the WOAH Wildlife Health Framework
- Early in 2021, a consultant-led ‘rapid review of evidence on managing the risk of disease emergence in the wildlife trade’ was completed.

✓ WOAH set up an Ad Hoc Group (Group of experts) on reducing the risk of disease spillover events at markets selling wildlife and along the wildlife supply chain
✓ Experts from different sectors (wildlife crime, wildlife trade, animal welfare, risk assessment, veterinary services, animal health standards, ecology, public health, social and behavior change and systems-thinking)
✓ 7 virtual meetings in addition inter-sessional work since June 2021
Overview

- **Primary audience**: Veterinary Services, Wildlife Authorities, Public Health authorities, other Competent authorities with a mandate on animal health and welfare, public health, wildlife management and trade, law enforcement.

- Guidelines provide **an approach** to facilitate users to identify and select pragmatic, flexible, practical, adaptable and relevant disease risk reduction and intervention strategies.

- **Taking into account** identified disease risks, capacity, and needs of the users.

- **With the final objective** to ensure feasible, effective and sustainable implementation on the ground at markets selling wildlife and along wildlife trade supply chains.
Approach

Identify a wildlife trade supply chain or interface for which disease risks are to be explored and reduced

- Identify and engage stakeholders and experts
- Assess the balance among the disease risk, conservation risk, and socio-economic value
- Conduct risk Analysis to identify and prioritize the disease hazards
- Assess and expand stakeholder engagement and training
- Identify critical capacity gaps and requirements
- Establish metrics for each intervention and monitor and assess effectiveness
- Develop and revise management and intervention strategies using the hierarchy of controls or other approaches
- Develop appropriate measures to control the disease risks identified based on prioritises
- Adjust accordingly
Implementation (Disease risk intervention strategies)

Decision Making Frameworks in the Face of Complexity
Availability of the Guidelines

✓ Guidelines already finalized
➢ On the process of copy editing
➢ Should be available by June 2023

➢ Guidelines will be available on the WOAH website – Wildlife page:

➢ Guidelines will be diffused to International Partners and the WOAH National Focal Points for Wildlife + Pilot project in the implementation of the Guidelines in some countries
Thank you
Discussion

Jackson Katampi
Zambia National Coordinator, IUCN Green List For Protected and Conserved Areas, Ministry of Tourism and Arts, Department of National Parks and Wildlife, Zambia
Thank you!


Email gwp-info@worldbank.org to join webinar and newsletter mailing lists.