THE IMPORTANCE OF ONE HEALTH IN SUCCESSFUL PREPAREDNESS

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Figure 1 – Trends in occurrence and victims*

*Victims: Sum of deaths and total affected

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### Table 1 – Natural disaster subgroup definition and classification

<table>
<thead>
<tr>
<th>Disaster Subgroup</th>
<th>Definition</th>
<th>Disaster Main Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geophysical</td>
<td>Events originating from solid earth</td>
<td>Earthquake, Volcano, Mass Movement (dry)</td>
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<tr>
<td>Meteorological</td>
<td>Events caused by short-lived/small to meso scale atmospheric processes (in the spectrum from minutes to days)</td>
<td>Storm</td>
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<tr>
<td>Hydrological</td>
<td>Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up</td>
<td>Flood, Mass Movement (wet)</td>
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<tr>
<td>Climatological</td>
<td>Events caused by long-lived/meso to macro scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)</td>
<td>Extreme Temperature, Drought, Wildfire</td>
</tr>
<tr>
<td>Biological</td>
<td>Disaster caused by the exposure of living organisms to germs and toxic substances</td>
<td>Epidemic, Insect Infestation, Animal Stampede</td>
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</table>
Affected by Disasters Territory size shows the proportion of all people worldwide affected by disasters between 1975 and 2004, that live there. Being ‘affected’ includes requiring emergency assistance for basic survival, and catching an infectious diseases not usually found there.
Killed by Disasters - the proportion of all deaths caused by disasters, which overwhelm local resources, that died there 1975-2004. It includes outbreaks of infectious diseases not normally found there.
Infectious and Parasitic Disease Deaths
• Epidemics and pandemics along with other hazards cause significant health impacts and disruption to the functioning of society including social, economic and political stability.

• While the scope of the Hyogo Framework for Action (2005-2015) recognized biological hazards, the approach to implementation of the HFA has generally not addressed epidemic and pandemics within the context of disaster risk reduction.
• In the negotiation of the post-2015 framework for disaster risk reduction, Member States of the United Nations have advocated for more explicit inclusion of epidemics and pandemics in the framework, reflecting on the evidence that they can cause emergencies and disasters on a scale comparable to other hazards, and the need for common approaches for managing risks from all types of hazards.

• In order to address the risks of epidemics and pandemics, there is a recognized need for countries, UN agencies, NGOs and civil society to work together to promote health centered emergency and disaster risk management, including epidemics and pandemics.
• In some countries, the risk of epidemics and pandemics is well-integrated in all-hazard approaches to emergency and disaster risk management.

• However, in many countries the risk of epidemics have been addressed within the health and agriculture sectors rather than through a whole-of-society approach.

• understanding of risk factors for epidemic diseases has led to initiatives to manage risks at the human, animal and environmental interface (e.g. One Health)
The major gaps addressed by:

- **Integration of epidemic and pandemic risks into the all-hazard emergency and disaster risk management** policies, plans and practices of governments, private sector and stakeholders within and across all sectors and at all levels of society
- **Knowledge and technology transfer** between communities and actors involved in managing risks of epidemics and pandemics with those working in disaster risk reduction
- **Increased support to understanding and managing risks at the human, animal and environmental interface, such as One Health**
- **Means to promote more urgent scientific research** on epidemics and pandemics, and effective risk management strategies
- **Strengthening the community-based approach** to reducing risks of epidemics and pandemics (and other sources of risk), including formal and informal health promotion, and primary-, home and self-care
Hazard

• A possible, future occurrence of natural or human-induced physical events that may have adverse effects on vulnerable and exposed elements

(White, 1973; UNDRO, 1980)
Disaster

A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

(UNISDR Terminology on Disaster Risk Reduction, 2009)

Disasters may also be seen as the materialization of risk and signify ‘a becoming real’ of this latent condition that is in itself a social construction (Renn, 1992)
Disaster Risk

The possibility of adverse effects in the future. It derives from the interaction of social and environmental processes, from the combination of physical hazards and the vulnerabilities of exposed elements.

The hazard event is not the sole driver of risk, and there is high confidence that the levels of adverse effects are in good part determined by the vulnerability and exposure of societies and social-ecological systems.

Disaster Risk

The *risk equation* measures the level of hazard risk for an area:

\[ R = H^{(1 \ldots n)} \times \left( E_x \times \frac{V}{C} \right) \]

- \( H \) = Type of hazard
- \( E_x \) = Exposure
- \( V \) = Vulnerability to hazard
- \( C \) = Capacity to cope/recover
Hazards are natural or human induced, disasters are man-made

A catastrophic event, whether precipitated by natural phenomena or human activities, assumes the state of a disaster when the community or society affected fails to cope. Natural hazards themselves do not necessarily lead to disasters.

Natural hazards like typhoons, and earthquakes, however intense, inevitable or unpredictable, translate to disasters only to the extent that the population is unprepared to respond, unable to cope, and, consequently, severely affected.

Disaster risk management cycle
Disaster Risk Management Cycle

Source: Australian Development Gateway
Approaches to Disaster Management

The prevailing practices are more inclined towards managing response to disasters (which requires preparedness) than towards managing risks and the underlying conditions that lead to disasters (which requires, among others, risk assessment, vulnerability reduction, and capacity enhancement).

The focus on risk in the search for more effective approaches to disaster management stems from the compelling need to understand more the root causes and underlying factors that lead to disasters.

(de Guzman, 2003)
The sustainable development approach

- **The comprehensive approach** entails developing and implementing strategies for different yet complementing aspects of disaster management, i.e. prevention and mitigation, preparedness, response and recovery, in the context of sustainable development.

- **The all-hazards approach** concerns developing and implementing disaster management strategies for the full range of probable disasters.

- **The integrated approach** ensures that all organizations, including government, private and community organizations, are involved in disaster management; promotes multi-sectoral and intersectoral coordination and reduces duplication and inefficiencies.

- **The prepared community concept** - the application of all the foregoing approaches at the community or local level. It emphasizes the important roles and responsibilities of the members of the community in establishing disaster management programs and systems, and ensuring self-reliance and self-sufficiency in times of disaster.

*(de Guzman, 2003)*
Human – Animal – Ecosystem Interface
Definitions of One Health

‘One Health is the collaborative effort of multiple health science professions, together with their related disciplines and institutions – working locally, nationally, and globally – to attain optimal health for people, domestic animals, wildlife, plants, and our environment.’

**One Health Commission**

‘A collaborative, international, cross-sectoral, multidisciplinary mechanism to address threats and reduce risks of detrimental infectious diseases at the animal-human-ecosystem interface.’

**Food and Agriculture Organization**

The World Organisation for Animal Health, while not specifically defining One Health, endorses the approach as ‘a collaborative and all-encompassing way to address, when relevant, animal and public health globally. This collaboration should not be limited to only the international level, but must be translated as a new and fundamental paradigm at national levels’.

The One Health Global Network considers that the aim of One Health is to ‘improve health and wellbeing through the prevention of risks and the mitigation of effects of crises that originate at the interface between humans, animals and their various environments’.

The One Health Committee of the World Small Animal Veterinary Association comments that ‘One Health or One Medicine proposes the unification of the medical and veterinary professions with the establishment of collaborative ventures in clinical care, surveillance and control of cross-species disease, education, and research into disease pathogenesis, diagnosis, therapy and vaccination. The concept encompasses the human population, domestic animals and wildlife and the impact that environmental changes (‘environmental health’) such as global warming will have on these populations.’

The One Health Initiative considers One Health to be ‘a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals, and the environment’.
One Health, Eco-health, Health Socio-Ecological Systems (HSES)

Systemic, participatory approaches to understanding and promoting the health and wellbeing of people, animals and ecosystems in the context of complex social-ecological interactions.

(David Waltner-Toews, 2013)
Some responses to Complexity

Focusing on Outcomes

• Ecological integrity
• Biodiversity conservation
• Sustainable livelihoods
• Resilience
• Ecosystem health
• Healthy Communities
• Poverty reduction
• MDGs (and post 2015 goals)
• ONE HEALTH

Focusing on Processes

• Systems Design Engineering
• Soft Systems Methodology
• Participatory Action
• Collaborative Learning
• Adaptive Environmental Management
• Appreciative Inquiry
• The Ecosystem Approach
• ECOHEALTH

David Waltner-Toews
What Changes in a Complex Systems Approach?

- Our understanding of the world (uncertainty)
- The roles of experts and investigators (Facilitators in an expanded peer group – Communities of Practice and networks of trusted colleagues and friends)
- Decision-making, governance, management, monitoring (Innovative and flexible)
- Measures of quality or “success”: What are we trying to achieve? - multiple outcomes simultaneously

David Waltner-Toews
2004: The Wildlife Conservation Society publishes the 12 Manhattan Principles

2007: The American Medical Association passes the One Health resolution promoting partnership between human and veterinary medicine

2007: The One Health approach is recommended for pandemic preparedness

2008: FAO, OIE, and WHO collaborate with UNICEF, UNSC, and the World Bank to develop a joint strategic framework in response to the evolving risk of emerging and re-emerging infectious diseases

2008: One Health becomes a recommended approach and a political reality

2009: The One Health Office is established at CDC

2009: USAID establishes the Emerging Pandemic Threats program

2009: Key recommendations for One World, One Health™ are developed

2010: The Hanoi Declaration, which recommends broad implementation of One Health, is adopted unanimously

2010: The Tripartite Concept Note is published

2010: Experts identify clear and concrete actions to move the concept of One Health from vision to implementation

2010: The United Nations and the World Bank recommend adoption of One Health approaches

2010: The European Union reaffirms its commitment to operate under a One Health umbrella

2011: The 1st International One Health Congress is held in Melbourne, Australia

2011: The 1st One Health Conference in Africa is held

2011: The High Level Technical Meeting to Address Health Risks at the Human-Animal-Ecosystem Interface builds political will for the One Health movement

2012: The Global Risk Forum sponsors the first One Health Summit

2013: The 2nd International One Health Congress is held in conjunction with the Prince Mahidol Award Conference

FIG 1: Milestones in the global recognition of One Health, abstracted from www.cdc.gov/onehealth/people-events.html
From proof of concept to systematic evaluation of One Health

One Health approach considers the role of changing environments with regard to infectious and chronic disease risks affecting humans and nonhuman animals.

Recent disease emergence events have lent support to a One Health approach.

In 2010, the Stone Mountain Working Group on One Health Proof of Concept assembled and evaluated the evidence regarding proof of concept of the One Health approach to disease prediction and control.

Rabinowitz et al. 2013
Aspects examined included the feasibility of integrating human, animal, and environmental health and whether such integration could improve disease prediction and control efforts.

They found evidence to support each of these concepts but also identified the need for greater incorporation of environmental and ecosystem factors into disease assessments and interventions.

The findings of the Working Group argue for larger controlled studies to evaluate the comparative effectiveness of the One Health approach.
Several One Health initiatives have been implemented, such as the establishment of cross-sectoral coordination, communication and data sharing mechanisms, but no standardised methodology exists for quantitative evaluation of One Health activities.

The overall aim of NEOH is to enable appropriate (quantitative) evaluations of One Health activities and hence comparison of initiatives as well as informed decision-making and resource allocation. To this end, NEOH will deliver:

- A science-based, standardised framework for the evaluation of One Health
- A suite of example evaluations of One Health initiatives
- A networked community of experts collaborating to assess the value of One Health
- A pool of early-stage researchers trained in performing evaluations of One Health activities.