



SEARCA ADSS Seminar Series

PROACTIVE STRATEGIES FOR A ONE HEALTH FUTURE:

Lessons Learned and Moving Forward

Hannah Leah Elbo Morito, MSc

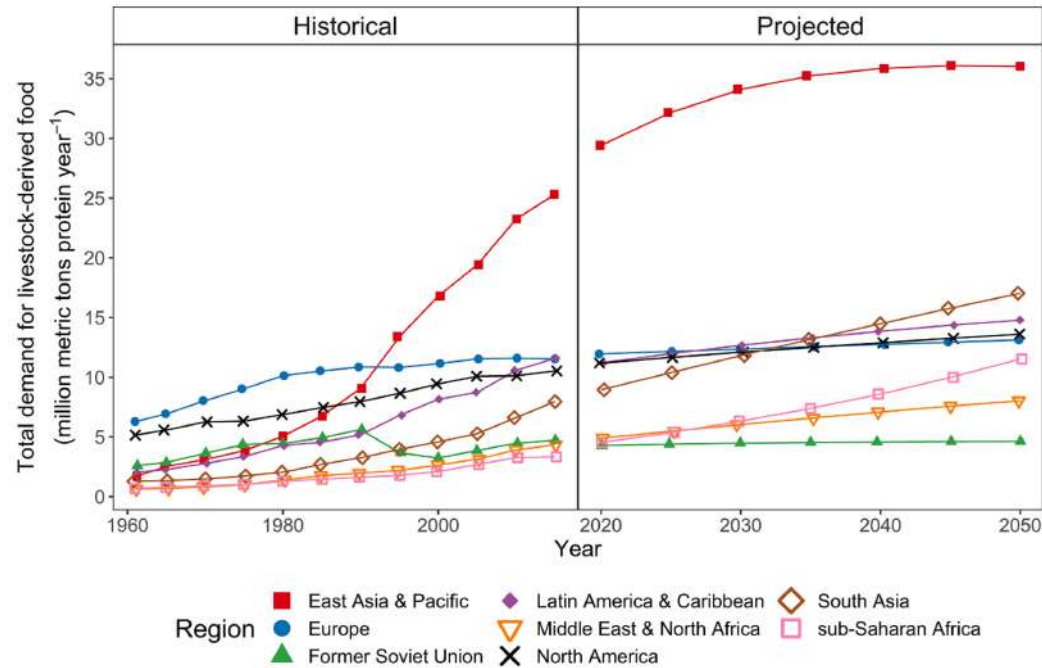
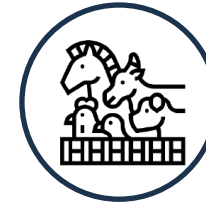
FEVRIER 2024



38%

Increased demand for animal-based products between 2020 to 2050

Komarek, et al., 2021



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ONE HEALTH

“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 (OHHLEP)*



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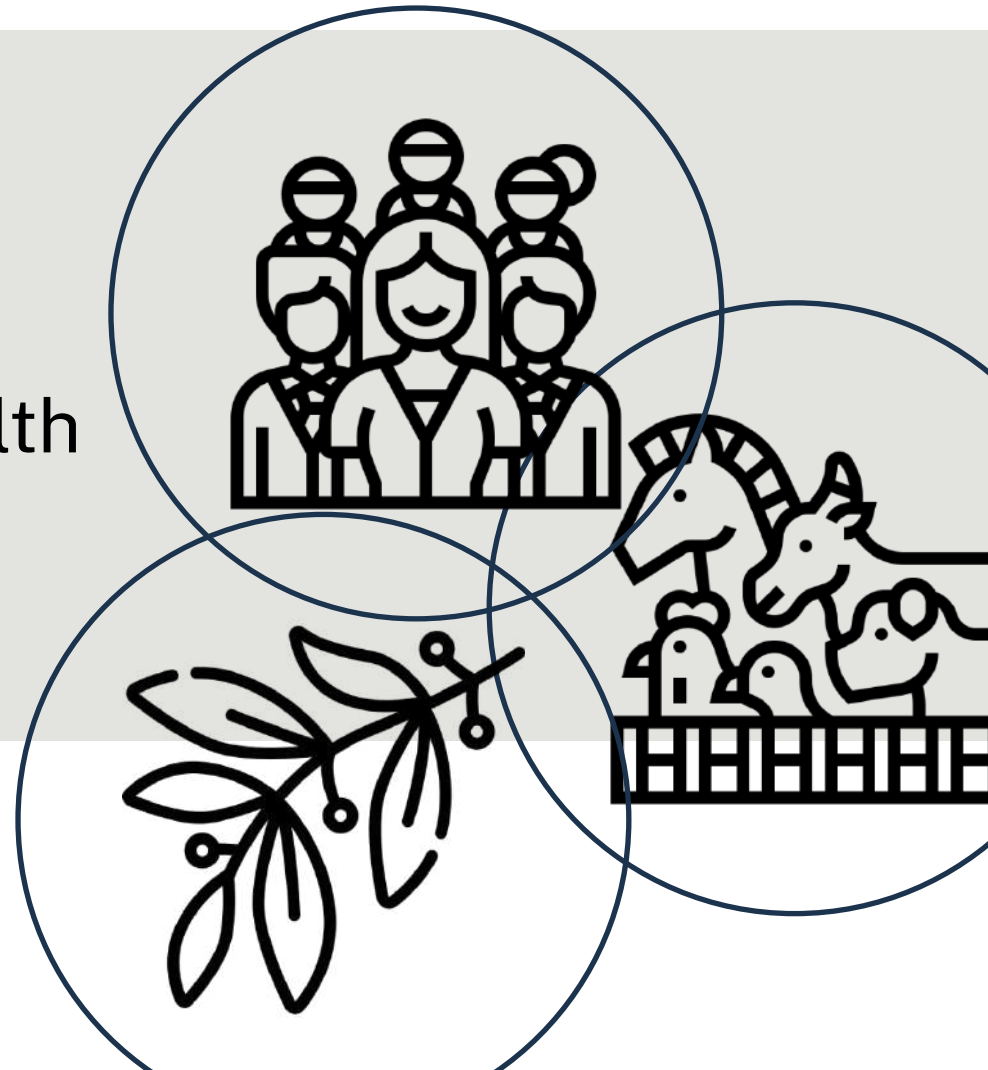
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ONE HEALTH

A holistic approach to health





Monkey Dogs

- Billions of agricultural losses because of wild animals
- Trained dogs that were previously household pets to chase away monkeys but ignore other animals
- Japanese government-subsidized
- Resulted to stronger communities
- Alternatives:
 - Mass culling of wild animals
 - Sophisticated but dangerous and expensive traps



The Mainichi



Date Palm Nipah Outbreak

- Date palm sap contaminated with Nipah virus
- Bats also like the sap
- Don't-drink-sap Bangladesh government campaign
- Community-based stigma
- Bamboo covers – took time to implement
 - Infrared bat photos
 - Behavior-influenced solution





INVASIVE SPECIES

Also known as *alien species*

Species that are introduced to an environment that are not native to its own that becomes overpopulated and harms its new environment also causing economic damage

INVASIVE SPECIES

Due to man-made interventions, not limited to introductions but also disruptions in the food web, e.g., removal of natural predators



WILDLIFE TRADE AND ZOOZOSES

A multi-billion dollar industry whose practices have also resulted in the emergence of infectious diseases, especially zoonoses

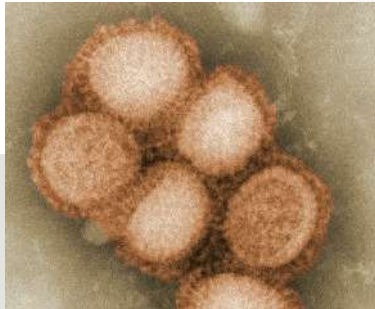
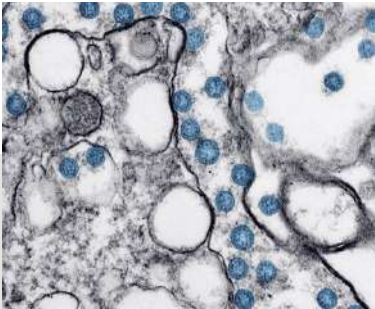


These animals can serve as direct or intermediate hosts to diseases that can be transmitted from animals to humans

EMERGING INFECTIOUS DISEASES

An emerging infectious disease is one that either has **appeared and affected a population for the first time, or has existed previously but is rapidly spreading**, either in terms of the number of people getting infected, or to new geographical areas.

- *World Health Organization*



Human infectious diseases caused by any pathogen that come from animals

ZOONOSIS

**ALL KNOWN
INFECTIOUS
DISEASES**

60%

ZOOONOTIC

Taylor, et al., 2001



EMERGING INFECTIOUS DISEASES

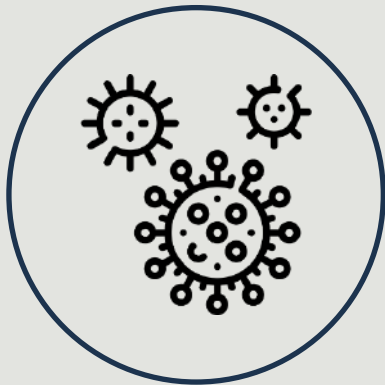
75%

ZOOONOTIC

Taylor, et al., 2001



ZOONOTIC DISEASES



76%

viruses and prions

only second to helminths

Taylor, et al., 2001

HUMAN-ANIMAL INTERFACE

Promoted the emergence of zoonotic diseases

Further driven by modern anthropogenic developments, such as:

- Domestication
- Agriculture
- Urbanization
- Industrialization
- Colonization

Developments are also largely paralleled by medical, technological, and scientific progress





**“Our very strength
invites challenge.
Challenge incites
conflict. And conflict...
breeds catastrophe.”**

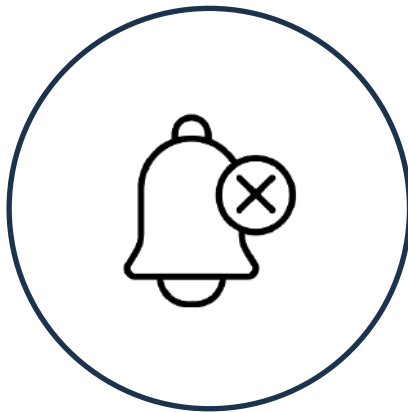
CAPTAIN AMERICA: CIVIL WAR



OF OUTBREAKS AND PANDEMICS



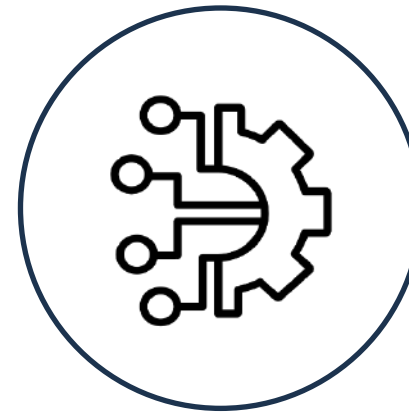
Disruption on any of these interfaces increase the predisposing factors that allow for emergence of zoonotic diseases



**No
warning**



**Global
cooperation**












**Capable
system**

**Proactive measures against future pandemics
that are anchored to a One Health approach**



Proactive Measures

-  Early warning systems
-  Pathogen discovery and characterization
-  Rapid diagnostic platforms
-  Mathematical models
-  Animal models
-  Clinical trial platforms
-  Pharmaceutical interventions
-  Non-pharmaceutical interventions
-  Communication



EARLY WARNING SYSTEMS



Syndrome- and laboratory-based surveillance systems in place



Established systems that reports data, both crucial and background data, as soon as it is available



Medical and veterinary professionals in close collaboration with other experts on both national and international level

PATHOGEN DISCOVERY & CHARACTERIZATION



High-throughput DNA sequencing



Bioinformatics platforms and pipelines



Specialized facilities with higher biosafety levels

Disease X

Coined by the World Health Organization to refer to a hypothetical, **unknown pathogen with the potential to cause a future epidemic**



zoonotic



latent



synthetic

COMMUNICATION



Science-based, data-driven communication



Collaboration with social experts and field workers, etc.



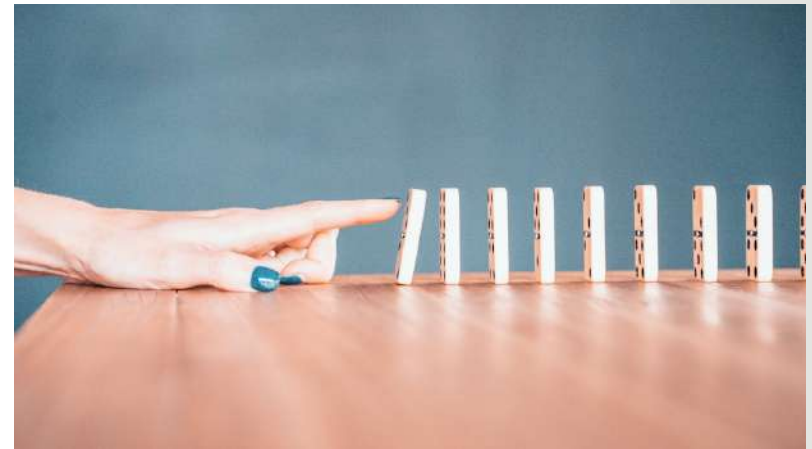
Community engagement



OTHER CONSIDERATIONS

**REDUCE
LIKELIHOOD**

**MITIGATE
CONSEQUENCES**



THANK YOU
Got questions?

