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http://www.onehealthinitiative.com
Establishing a One Health Approach to Combat Emerging Zoonotic and Transboundary Diseases

One Health – from Concept to Practice
COLLABORATION

No one—not rock stars, not professional athletes, not software billionaires, and not even geniuses—ever makes it alone.

Malcolm Gladwell
**One Health** is a collaborative, multisectoral, and transdisciplinary approach - working at local, regional, national, and global levels - to achieve optimal health and well-being outcomes for people, animals, plants and their shared environment ... we are all inextricably linked.
1. Networks
2. Economics
3. Leadership
HUMAN-ANIMAL CONNECTION

Food (wild and domesticated), transportation, sport, research... and companionship
ENVIRONMENTAL HEALTH

1. Food and Water Safety
2. Zoonoses & Vectorborne Disease Prevention & Control
3. Safe and Healthy Places

Microbes, chemicals, radiation and other hazards
• Human, animal, and environmental health are inextricably linked.

• Considerable overlap between fields before 20th century.

• Explosion in scientific knowledge in 20th century:
  • led to the development of intellectual silos and an increasingly reductionistic approach to health and disease.

**Time has come for systems thinking**
“Knowing is not enough; we must apply. Willing is not enough; we must do.”

— Goethe
EID – Emerging Infectious Diseases

Economic Impact of EID

Figures are estimates and are presented as relative size.

- FMD and HPAI
  - Japan and Korea
  - Billions $$$$$$

- SARS
  - China, Hong Kong, Singapore, Canada
  - $30-50bn

- Foot & Mouth
  - UK
  - $25–30bn

- Avian Flu Asia,
  - $5–10bn

- BSE U.S.,
  - $3.5bn

- BSE Canada
  - $1.5bn

- BSE Japan
  - $1.5bn

- Classical Swine Fever,
  - Netherlands
  - $2.3bn

- HPAI, Italy
  - $400m

- Nipah, Malaysia
  - $350-400m

- Avian Flu, NL
  - $500m

- Foot & Mouth Taiwan,
  - $5-8bn

- BSE UK,
  - $10-13bn

Years:
Examples of Economic Impact of Infectious Disease Outbreaks: Non-Health Industries

- Agriculture
- Travel
- Tourism and public events
- Mining

SARS
China, Hong Kong, Singapore, Canada
$30-50bn

H1N1 Worldwide
$45-55bn

H5N1 Avian Flu
Worldwide, $30bn

Zika,
Latin America
& the Caribbean
$7-18bn

Ebola
West Africa,
$10bn

Figures are estimates and are presented as relative size. Based upon bio-era, World Bank, and UNDP data. Chart updated by EcoHealth Alliance.

[Slide credit: World Banking on One Health, October 11, 2017 presentation by Dr. Tim Bouley at the Uppsala Health Conference, Uppsala, Sweden.]
Rift Valley fever (RVF) is an acute viral disease that can cause severe disease in domestic animals (such as buffalo, camels, cattle, goats and sheep) and humans. Disease in these species is characterized by fever, severe illness, abortions, and a high morbidity and mortality rate. The RVF virus and Hantavirus belong in the family Bunyaviridae - can cause fever and encephalitis.

RVF is generally found in regions of eastern and southern Africa, but also in most countries of sub-Saharan Africa, Madagascar, Saudi Arabia and Yemen. RVF must be reported to the World Organization for Animal Health (OIE).

RVF is a potential, emerging threat to wildlife, livestock and humans in the USA.
World Health Organization (WHO)
Ten Threats to Global Health in 2019

1. Air pollution and climate change
2. Non-communicable diseases
3. Global influenza pandemic
4. Fragile and vulnerable settings
5. Antimicrobial resistance
6. Ebola and other high-threat pathogens
7. Weak primary health care
8. Vaccine hesitancy
9. Dengue
10. HIV/AIDS

https://www.who.int/emergencies/ten-threats-to-global-health-in-2019
OPPORTUNITIES FOR ONE HEALTH

Emerging Diseases
Bio-Agro-Terrorism
Emergency Response
Biomedical Research

Food Security
Nutrition
Foodborne Disease

Antibiotic Resistance

Environmental Health

Injuries

Occupational Health

Health Education

Disability
Mental Health

Obesity
Physical Activity

~Pappaioanou
NEW SMITHSONIAN EXHIBITION EXPLORES PANDEMICS AND EMERGING INFECTIOUS DISEASES

The Smithsonian’s National Museum of Natural History will mark the 100th Anniversary of the Great Influenza Pandemic of 1918 with a new exhibition, Outbreak: Epidemics in a Connected World, which has a One Health focus and will remain on view for the public for three years!

• The origins of zoonotic diseases - Since the rise of domestication, human interactions with other animals have increased and changed. Today, three-quarters of all new infectious diseases affecting humans originate in animals, and “Outbreak” focuses on how they spill over, spread and how they can be contained.

• Humans’ role in spreading animal-borne viruses - “Outbreak” will look at the effects of habitat fragmentation and diversity loss, urbanization and global travel on increasing the risks of zoonotic-disease emergence and highlight the role of scientific research and behavior change in lowering risks of disease transmission.

• How outbreaks are handled - Future outbreaks are certain to occur. The exhibition introduces people who play many different roles in the global fight against epidemics, from identifying their animal origins to developing vaccines and interventions to help prevent the next one.

Understanding how we can prevent zoonotic viruses like Ebola, Zika and influenza from emerging and quickly spreading around the world—recognizing that human, animal and environmental health are connected as ‘One Health’—is a critical science lesson for the 21st century … Sabrina Sholts, lead curator of the exhibition.

https://newsdesk.si.edu/releases/new-smithsonian-exhibition-explores-pandemics-and-emerging-infectious-diseases
Thank you!

http://www.onehealthinitiative.com/