One Health – The Need for a New Paradigm for Implementation

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“Between animal and human medicine there is no dividing line – nor should there be. The object is different but the experience obtained constitutes the basis of medicine.”

-Rudolf Virchow (1821-1902),
German physician, pathologist
“Quite apart from avian influenza, emerging animal diseases, three quarters of which are zoonotic, are set to become more and more part of the world landscape”

OIE/World Bank joint press release
Jul 29, 2010
Emerging and Reemerging infections - 70% vector-borne or zoonotic

Map showing the distribution of various diseases and their transmission vectors, with indications for Arthropod-borne, Rodent-borne, and Other (including bats) categories.
Emerging Infectious Diseases

- FMD
- West Nile
- Plague
- Hanta virus
- Ebola virus
- Rift Valley Fever
- Monkeypox
- Anthrax
- Nipah virus
Economic Impact of Selected Infectious Diseases

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

Foot & Mouth
- UK
  - $25-30 bn

BSE, UK
- $10-13 bn

Foot & Mouth
- Taiwan, $5-8 bn

Classical Swine Fever
- Netherlands, $2.3 bn

BSE, Japan
- $1.5 bn

Nipah, Malaysia
- $350-400 m

HPAI, Italy
- $400 m

BSE, Canada
- $1.5 bn

Avian flu, NL
- $500 m

BSE, US
- $3.5 bn

Avian Flu, Asia
- $8-12 bn

Figures are estimates and are presented as relative size.
Recognized Global Interdependency
Speed of Global Travel in Relation to World Population Growth

One Health Initiative

Vision Statement:

One Health (formerly called One Medicine) is dedicated to improving the lives of all species—human and animal—through the integration of human medicine, veterinary medicine and environmental science.
What are we doing well?
"One Health" supporters as of 2010-09-29: (Partial)
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Organizations:
American Association of Veterinary Laboratory Diagnosticians
American Association of Wildlife Veterinarians
American College of Veterinary Microbiologists
American College of Veterinary Pathologists
American Medical Association
American Physiological Society
American Phytopathological Society
American Society for Microbiology
American Society of Tropical Medicine and Hygiene
American Veterinary Medical Association
Association of Academic Health Centers
Association of American Medical Colleges
Association of American Veterinary Medical Colleges
Association of Schools of Public Health
Corporation Red SPVet, Bogota-Columbia
Council of State and Territorial Epidemiologists
Croatian Society for Infectious Diseases
Delta Society
University of California, Davis Veterinarians Collaborate with Engineer for Unique Reconstructive Jawbone Surgery Dog...may be Applicable to Humans

UC Davis (USA), School of Veterinary Medicine is well known for its outstanding One Health activities. A recent One Health news item http://ucdavis.edu/ucdavis-today/201dog-jaw.html posted on their website highlights what can be achieved by the interdisciplinary/multidisciplinary collaborative efforts of engineering and veterinary medicine for potentially for people.

“The treatment not only offers hope for these dogs and other animals, but also will likely provide valuable information for human medicine.”, according to the website art Michael D. Lairmore http://faculty.vetmed.ucdavis.edu/faculty/mlairmore/, Dean of the School of Veterinary Medicine and longstanding One Health advocate called this “a wonderful event, celebrating a landmark clinical success made possible by collaboration between two UC Davis veterinary medical clinicians and a biomedical science’s professor.”

Linda C. Ybarra, Director of Strategic Planning and Communication says “this research project was performed by two veterinarians, Drs. Frank J.M. Verstraete, a professor veterinary medicine and chief of Dentistry and Oral Surgery http://www.vetmed.ucdavis.edu/vmth/small_animal/dentistry/verstraete/index.cfm and Boaz Arzi http://www.vetmed.ucdavis.edu/vmth/small_animal/dentistry/Arzi/Index.cfm at the William R. Pritchard Veterinary Medical Teaching Hospital at UC Davis in collaboration with an engineer, Huey, a postdoctoral researcher in the Department of Biomedical Engineering at UC Davis http://www.bme.ucdavis.edu/ethanasiculeb/people/postdoctoral-fellows/dan/.”
Wildlife Conservation Society Announces

One World One Health Research Projects Funded by Cargill

Researchers receive funding to conduct studies that analyze the connections between human health, food animal production, and the environment
From: World Bank 2010: People, Pathogens and our Planet
From: World Bank 2010: People, Pathogens and our Planet
Now:

Integrated Approach

What needs to be done?

Disease 1

Disease 2

Disease 3

Human health
Animal health
Tourism
Trade
Others

From: World Bank 2010: People, Pathogens and our Planet
What can we do more of?
Add new lenses

Maslow’s Hierarchy of Needs

Self-Actualization
- Pursue Inner Talent
- Creativity
- Fulfillment

Self-Esteem
- Achievement
- Mastery
- Recognition
- Respect

Belonging – Love
- Friends
- Family
- Spouse
- Lover

Safety
- Security
- Stability
- Freedom from Fear

Physiological
- Food
- Water
- Shelter
- Warmth
Two villagers of Ganyu county in Jiangsu province who were diagnosed with anthrax have improved after treatment, the Beijing Times reported.

The source of infection (was) a cow from another province.

About 10 villagers were involved in butchering the cow on July 25, which was dead before arriving at the village.
Confirmed the diagnosis of anthrax in cows on 18 Aug 2012.

Veterinarians collected the samples and treated the location where the carcass was found with disinfectants.

But after confirming the diagnosis the veterinarians discovered that the carcass of the cow had disappeared.

A search for the carcass was initiated the owner of the cows sold 150 kg of meat. The sold meat was partially recovered, and 10 kg] of meat were found in the cafe, "By the Sea".
Nearly 60 cattle are dead in Colorado after an outbreak of anthrax, but officials are confident the disease has been contained.

The outbreak occurred at a ranch in Logan County and marked the first confirmed incidence of the disease in Colorado in 31 years.

Officials quarantined the ranch, and cattle at nearby ranches are scheduled for vaccinations and some may take prophylactic antibiotics as a precaution.
Who should we add to the conversations ....

and what new understandings would they bring?
Cultural referencing....
Socioeconomics

From Wikipedia: Sustainability
Realistic options?
Three Aspects of Health - Inextricably Linked

Environment

Animal

Human
Four Aspects of One Health - Inextricably Linked

Environment

Animal

Human

Socioeconomics
One Health

Environment

Socioeconomics

Animal

Human