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**Veterinary Medicine:
 Contributing to a One Health World**


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 Public Health WORKS
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Canada

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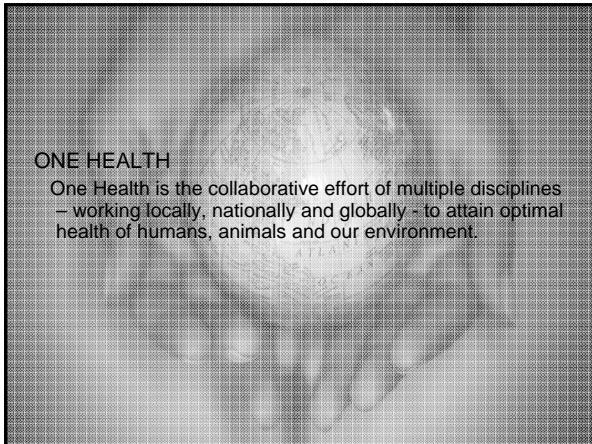
One World, One Health




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ONE HEALTH
 One Health is the collaborative effort of multiple disciplines – working locally, nationally and globally - to attain optimal health of humans, animals and our environment.



Convergence of human and animal health

- The convergence of human and animal health is not a new development
- Historically, mankind has both suffered and benefited as a result of this convergence



Uniform worn by plague doctors during the Black Death


Convergence of human and animal health

- Edward Jenner's Inquiry - Jenner observed that patients who had previously had cowpox were immune to smallpox - this led to the discovery of the small pox vaccine



Fig. 1. Cowpox lesions on the hand of Sarah Nelmes, from Jenner's Inquiry. Material from one of these lesions was used to 'vaccinate' James Phipps on May 14, 1796

History of "One Health"

- **Rudolf Virchow** (1821 - 1902)
 - Founder of comparative medicine, cellular biology and veterinary pathology
 - "Between animal and human medicine there are no dividing lines – nor should there be."
- **Sir William Osler** (1849 - 1919) 
 - Father of modern medicine
 - Taught at the Montreal Veterinary College and had responsibilities at McGill University Medical School
 - Pioneered the concepts of comparative medicine and comparative pathology and made important contributions to the standards of veterinary education
- **Calvin Schwabe** (1927 - 2006)
 - Renowned veterinary epidemiologist and parasitologist
 - Described and promoted the 'One Medicine' concept in his book editions of *Veterinary medicine and human health*
 - Proposed a unified human and veterinary approach against zoonotic disease



History of "One Health" in Canada

- The veterinary community in Canada has been dealing with "One Health" for a long time

- Rabies

- The World Health Organization (WHO) reports that more deaths occur worldwide from rabies than from other common infections (estimated 55 000 deaths annually)



Rabies vaccine baits dropped from aircrafts over large areas of Ontario

- In 1845, an Act was passed "to control rabies in Upper Canada"

- Human rabies in Canada is rare as a result of successful efforts across communities (medical, veterinary, natural resources) to prevent and control rabies in wildlife vectors and domestic animals



Vaccination of household pets

History of "One Health" in Canada

- The veterinary community in Canada has been dealing with "One Health" for a long time

- Tuberculosis - The first control program for TB in Canada was instituted in 1914



CFIA veterinarian testing a cow in Riding Mountain Park Eradication Area

- Brucellosis - Mandatory testing of all imports and exports was implemented in 1930; Canada was declared free of Brucellosis in the domestic cattle herd in 1985



- Concurrent improvements in human health, through a reduction in zoonotic disease transmission and the establishment of food hygiene regulations, have been recognized as a result of the management of these diseases in the animal population

Today's Global Reality

- Today's global reality is providing new and increasing challenges that require us to work together as a global community to define and address a broader concept of "health"



Today's Global Reality

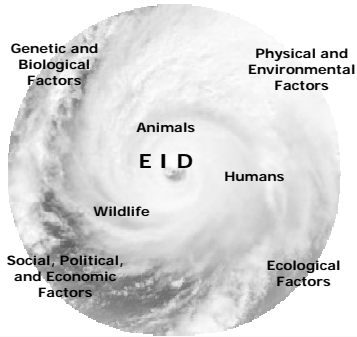
- There is no where in the world from which we are remote and no where with which we are not connected
- Infectious disease ecology demands that health science move beyond the confines of disciplines
- Good animal health management is a good public health strategy



Worldwide Ship Traffic



Convergence Model : The Perfect Biological Storm



Today's Global Reality

- Dynamic international threat environment
 - Globalisation
 - Animal and human population demographics
 - Disease susceptibility
 - Production and husbandry practices
 - Pathogen adaptation
 - Societal demand and value changes
 - Accidental, incidental and deliberate threats
 - Environmental degradation
 - Climate Change – The Deadly Dozen



'Deadly dozen' diseases on the move: scientists

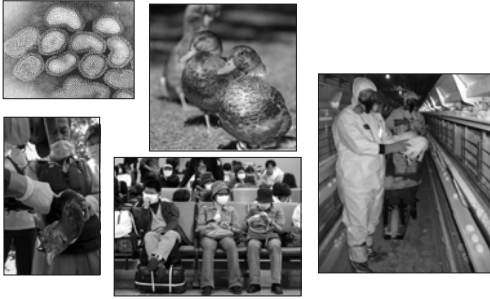
Animals could give people early warning, experts say

ANIMALS could give people early warning, experts say. Scientists warn that a 'deadly dozen' of diseases could be on the move, and that animals could give people early warning of their arrival.

William Daniels, of the University of Liverpool, says that the 'deadly dozen' includes diseases such as Ebola, SARS, and H5N1. He says that these diseases are often spread by animals, and that people who work with animals are at a higher risk of infection.

Daniels says that scientists are working to identify the 'deadly dozen' and to develop ways to prevent their spread. He says that one of the most important things is to improve surveillance of animals, and to ensure that people who work with animals are properly protected.

Impacts close to home
Avian Influenza



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Impacts close to home
SARS



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Impacts close to home
West Nile Virus



Human West Nile Virus Clinical Cases in Canada, 2006




Negative or Unknown Positive Travel-related


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Impacts close to home
West Nile Virus



Human West Nile Virus Clinical Cases
in Canada, 2007



Legend: Negative or Unknown Positive Travel-related

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Impacts close to home
BSE





Enhanced Animal Health Controls in Effect

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Impacts Close to Home

- Food borne illness challenges
 - E coli in spinach
 - E coli in ground beef
 - E coli in lunchmates
 - Salmonella in egg
 - Listeria in raw milk cheese
 - Listeria in deli meats

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The Determinants of Health

What does "One Health" encompass?

- Health is more than the absence of disease
 - A dynamic state of complete physical, mental, spiritual and social wellbeing and not merely the absence of disease or infirmity
- The impacts resulting from an animal disease outbreak can be physical, emotional and psychological
 - Prolonged exposure to stress can lead to alcohol and drug abuse, insomnia, ulcers, violence, etc
- Social, cultural, political, economic and environmental consequences may also arise from disease occurrences
 - Loss of identity or social status, inability to fund post-secondary education, divorce, loss of species of religious significance, loss of public confidence in the government, loss of biodiversity

Veterinary medicine and "One Health"

- The practice of veterinary medicine is a public good, founded on the strength of societal relevance
- Veterinarians, trained in comparative medicine, are frontline practitioners in the protection of humans, animals and the environment
 - Public education and awareness
 - Sentinel surveillance (national and global importance)
 - Emergency response
 - Zoonotic disease management
 - Food safety (local and international)
 - Water/environmental contamination
 - Antimicrobial resistance
 - Wildlife and aquatic animal health

Veterinary medicine and "One Health"

- In the March 2008 edition of the CVJ, two reports published back to back exemplified the link between human and animal health and the essential role that veterinarians have in protecting the health of both these populations through preventative programs and public education



- In Canada, an estimated 36% of households have a dog and 38% of households have a cat
- A recent CDC study indicates that almost 14% of pet owners are infected with Toxocara

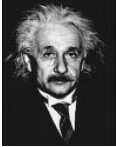
Next steps

"The best navigators are not always certain where they are, but they are always aware of their uncertainty" – Jimmy Buffet

1) Changing the culture - redefining "health" in a broader interdependent context for societal wellbeing

- Building on a strong comparative medicine and problem solving base, there is a shift in approach through:
 - **Broadening the scope of the practice of veterinary medicine** (be it through education, clinical practice, public practice, etc.)
 - **Recognizing new ways of working together and creating a true community of competencies** (forging partnerships between public/private veterinary practice, academia, the medical community, the public)
 - **Ensuring we are asking the right questions** (of ourselves and our clients)

Next steps



As a professor, Einstein was accused by the University President of using the same examination as he had the year before. Einstein replied "Yes, the questions are the same but this year the answers different".

Next steps

2) Support the next generation of veterinarians

- Students/new graduates bring new and progressive ideas and are the primary drivers behind innovation and change
- Veterinary colleges and employers need to engage students in the concept of "One Health", support students to pursue diverse career paths, and encourage new graduates to apply this concept in everyday practices



Next steps

3) Need to develop knowledge transfer and risk communication strategies (continued)

- Need to **create a dialogue with society** and **actively engage** them in the "One Health" concept – the public is an essential part of the "interwoven fabric" of human, animal and ecosystem health
- Need to better inform society about convergence, the level of risk, and how to manage risk
- Equipped with this knowledge, the public will have the power to make informed and educated decisions



Next steps

3) Need to develop knowledge transfer and risk communication strategies

- Veterinarians are the sole health care service with a direct relationship with both the human and animal communities and are a valued resource for all things "animal health related"
- The veterinary profession has an important role in informing consumers and educating the general public



"Information on its own does not necessarily create knowledge let alone wisdom"

Canada's Activities

- Meeting of the Provincial Chief Veterinary Officers and Chief Medical Officers – bridging gaps, forging partnerships



Canada's Activities

- Vet Colleges - recognizing and making appropriate partnership investments



Concentration areas in Investigative Medicine and Ecosystem Health (UCVM)



Production Animal Medicine / Herd Health (WCVM)



Centre for Public Health and Zoonoses (OVC)



Meat Hygiene Concentration (FMV)



Aquatic Animal Health (AVC)

Canada's Activities

- Masters of public health programs
- Canadian Veterinary Reserve
- Veterinarians Without Borders / Vétérinaires Sans Frontières
- National Health Students' Society Association



Canada's Activities

- Integrated surveillance - animal/human health
 - Canadian Animal Health Surveillance Network
 - Canadian Cooperative Wildlife Health Centre
 - Canadian Public Health Laboratory Network
 - Canadian Network for Public Health Intelligence
 - Groupe de recherche en épidémiologie des zoonoses et santé publique (GREZOP) – collaboration between CFIA, PHAC, FMV
 - Canadian Notifiable Avian Influenza Surveillance System (CanNAISS) - collaboration with provincial and territorial governments, poultry farmers and other industry representatives

CFIA's Activities

- CFIA investments in national and international experiential opportunities for veterinary students
 - CFIA Veterinary Student Internship Program
 - CFIA Veterinary Student Summer Employment
 - Support of international externships
 - Support of international summer projects in animal/public health
 - 2008 Smith Kilborne Foreign Animal Disease Training Program, Plum Island, New York
 - Centers for Disease Control Veterinary Student Day, Atlanta, Georgia, 2008



CFIA's Activities

Students Get First Hand Insight into Public Health at the Centers for Disease Control and Prevention

... (text continues) ...




The Canadian Veterinary Journal, July 2008, Vol 49, No. 7

CFIA's Activities

- Investments in international partnerships
 - Placements of CFIA veterinarians at OIE Communications Department, Paris, France and OIE Regional Office for the Americas, Buenos Aires, Argentina, World Health Organization
 - CFIA veterinarians placed in Canadian Embassies abroad
- Investments in assessing environment impacts
- Occupational health and safety training
- Development of new economic and consequence models
- Biosecurity/traceability programs

"A wise man should consider that health is the greatest of human blessings"
- Hippocrates

Risk transfer is not risk management. Similarly consequence transfer is not consequence management.



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Our vision:
To exist as a science-based regulator, trusted and respected by Canadians and the international community.

Our mission:
Dedicated to safeguarding food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy.

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