





One Health- One Medicine



Professor Martyn Jeggo

Director, Australian Animal Health Laboratory,

Victoria, Australia

www.csiro.au/li

One Health – how do we define this?






NPID
Vaccine
Research
May 2011

- One Health – we love this, we empathize with this!
- One Health One World (One health One Medicine)
- Science versus policy
- Research versus operational/implementation of health care
- Of what? Humans, animals, the environment?
- Health in general?
- Infectious diseases?
- What are the drivers behind this?

Do infectious disease matter?



NFID
Vaccine
Research
May 2011

“the risks to man from infectious disease have all but disappeared and we need to focus on those diseases such as cancer that are a consequence of our environment, what we do and what we eat”

Attributed to
Chief Medical Officer, USA



1986!

Infectious diseases affecting animals and man!



NFID
Vaccine
Research
May 2011

Human Influenza
H1N1

**HIV
AIDS**



cases

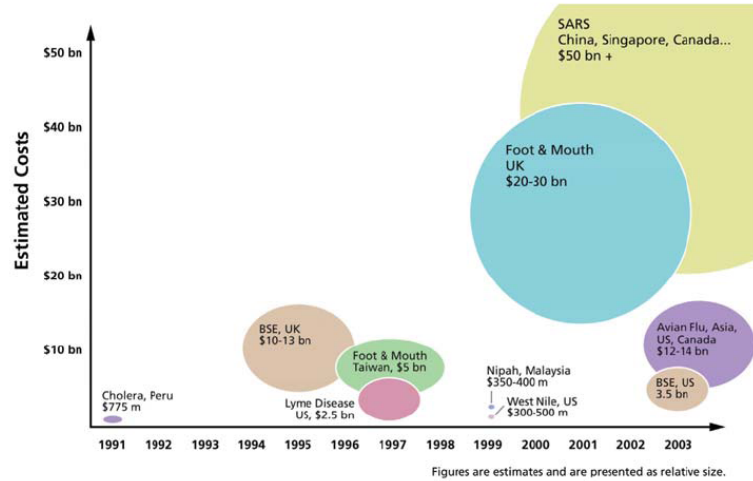
AP

The cost of disease



NFID
Vaccine
Research
May 2011

Figure 1: Economic Impacts of selected emerging and re-emerging infectious diseases. Source: *Bio-Era*, 2004.



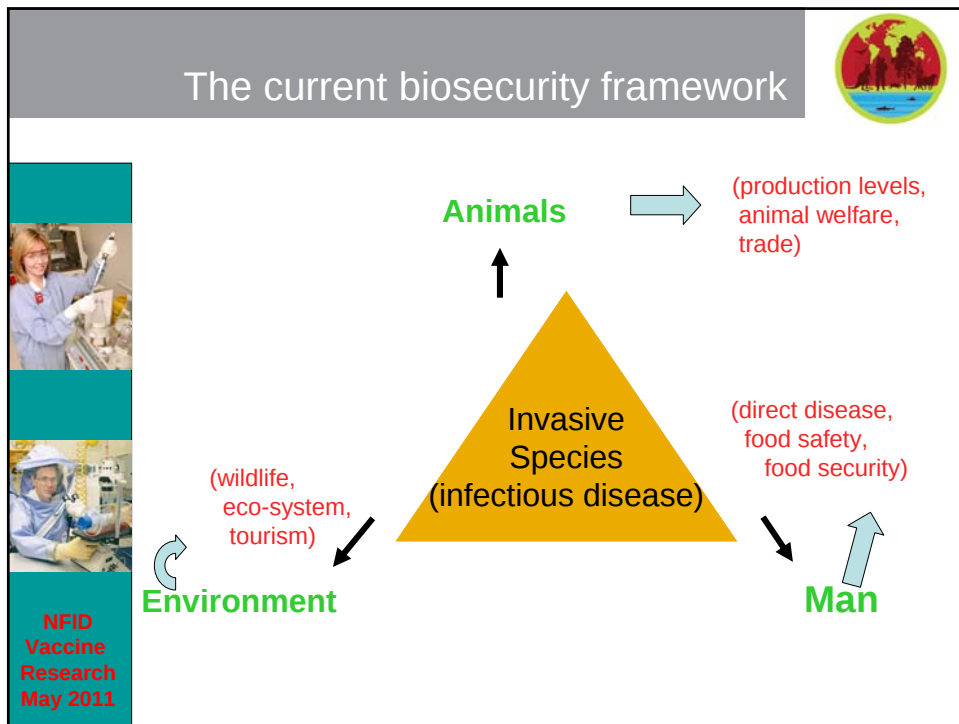
And so



NFID
Vaccine
Research
May 2011

- the incidence of infectious disease continues to grow globally
- Known infectious diseases continue to emerge and re-occur e.g. rabies, tuberculosis, salmonella, rift valley fever, West Nile, FMD!
- New infectious diseases keep arising e.g. HIV, BSE, Hendra, Nipah virus, SARS, Ebola Reston virus
- 75% of new diseases in man come from animals







1st International One Health Congress

Human Health, Animal Health, the Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011
www.onehealth2011.com



Supporting Organisations



Congress Host



What came before?



NFID
Vaccine
Research
May 2011

- **One Health Initiative**
(www.onehealthinitiative.com)
- unites human and veterinary medicine
- very broad
- driven by Bruce Kaplan, Laura Kahn, Tom Monath and Jack Woodall
- Over 500 endorsements by science leaders
- *“One health is the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals, plants and our environment”*

What came before?



NFID
Vaccine
Research
May 2011

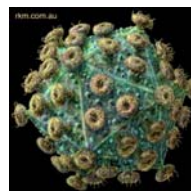
- **“One World One Health” meeting, Winnipeg, Canada 2009**
 - Hosted by Public Health Agency of Canada
 - From Ideas to Action
 - Identified country level actions
- **Key agreement between FAO, OIE and WHO**
 - Work together on One Health
 - Initial focus on Avian Influenza/Human pandemic
 - move towards joint programs in other areas

What came before?



NFID
Vaccine
Research
May 2011

- **Stone Mountain meeting, USA May 2010**
 - hosted by CDC
 - define a series of specific action steps to be implemented at sub-national, national and international
 - 3 to 5 year horizon, 7 key activities
 1. Training
 2. One health global network
 3. Information clearing house
 4. Needs assessment
 5. Capacity building
 6. Proof of concept
 7. Business plan
 - next meeting November 2011, Cancun, Mexico





**1st International
One Health Congress**

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

Why Australia; Why now?

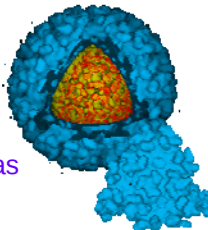
A number of emerging zoonotic diseases in Australia (Hendra) were driving a focus in Australia

A 70 million\$ Coordinated Research Centre on Biosecurity in Australia failed to engage human health

Recognised the need for policy and political dialogue as well as sharing of the science

For each "Theme" a Plenary session with keynote speakers and panel discussions and involvement of audience

Followed by 6 – 8 break sessions for science presentation (with ability to move between sessions)





**1st International
One Health Congress**
Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

Organizing Committee

Martyn Jeggo
John Mackenzie
Stephan Prowse
Robert Hall
Moiria McKinnon
Peter Daszak
David Heymann
Emma Wilkins
Gary Crameri

*Multi-national,
Multi-continent
Multi-cultural*

Scientific Advisory Committee

David Heymann
Laurie Garrett
Pierre Formenty
Bruce Kaplan
Lonnie King
Sai Kit (Ken) Lam
Thomas P. Monath
A.D.M.E. Osterhaus
Malik Peiris
Paul Gully
Ron Atlas
Jimmy Smith
Jimmy Whitworth
Juan Lubroth
Mark Rweyemamu
William B. Karesh
Jørgen Schlundt



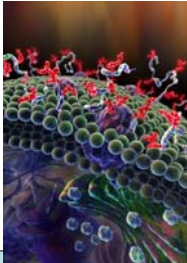
**1st International
One Health Congress**
Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

The overall programme

1. Setting the Scene Plenary Session
2. Disease emergence
3. Environmental drivers
4. Trade, food security and food safety
5. Science policy and political action



A number specialised sponsored sessions and additional keynote presentations augmented the above proceedings

expected 250 participants achieved 650!
expected 70,000\$ sponsorship achieved 600,000\$



1st International
One Health Congress

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

The science – disease emergence

- Behavioral and social interventions are a fundamental for preparedness and response to zoonotic outbreaks
- Extensive research into bat ecology and bat viruses provided an insight into the application of One Health, enabling better understanding of risk and potential solutions such as habitat management
- Emergence of significant wildlife disease such as *Chytridiomycosis* and marine pathogens reflect insufficient risk assessment and capacity limitations - simply not enough awareness and knowledge
- Avian influenza virus, H5N1 is still evolving in wild bird reservoirs and now isolated from domestic pets. Resistance to the neuraminidase inhibitor, oseltamivir (Tamiflu), now being found in many environments and potential for resistance to occur in wild birds
- Strategic 'health communication' is needed with multiple approaches and methodologies with clear expectations of purpose



1st International
One Health Congress

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

The science – environmental drivers

- Trade, people density, people and animal movement, changing agricultural practices and climate change are drivers at both local and regional level
- Clearly climate change is happening yet the impact and how the world responds is uncertain. Agricultural practices impact on climate and are likely to be impacted by climate change in the future
- Surveillance of animal health is poor and surveillance of wildlife and ocean life are almost non-existent
- Need for a new paradigm to broaden the meaning of the term zoonoses to recognize that the flow of microbes and their genes can be multi-directional and include environmental reservoirs
- Clear 'hotspots' driven by people and trade movements and the likelihood of potential emergency infectious diseases (EID) in different parts of the world



1st International
One Health Congress

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

The science – trade, food security, food safety

- UN system High Level Task Force (HLTF) on the Global Food Security Crisis and the Updated Comprehensive Framework for Action (UCFA) highlighted the many actions being taken to address food security
- Surveillance and risk assessment approaches critical to underpin both trade and food safety
- Complex predictive models now used for risk assessment of emerging infectious diseases
- Community people involvement essential in predictive modeling as are tools such as *satellite telemetry* (GPS) and *remote sensing*.
- A number of papers focused on the broader aspects of community engagement and involvement of broader stakeholder groups
- The One Health Alliance of South Asia (OHASA) as an example aims to predict and prevent emerging infectious diseases on the Indian subcontinent, incorporating consideration of population growth and movement, food insecurity, public health threats and fragile ecosystems



1st International
One Health Congress

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

Policy and Political Action

- Both keynote speakers highlighted the need for concerted political action to move forward One Health at the national and international level
- National Governments and International Organizations have recognized the benefit of One Health
- The United States Government by setting up the USDA One Health Multi-Agency Coordination Group; Canada by applying a One Health approach to zoonoses. Regional developments include the OHASA (South Asia) group, EPIZONE (Europe) and IEE (Sweden).
- Leadership is required in integration of One Health elements in a 'top down' approach.
- UN Organizations combined in an unprecedented way to look at pandemic action forged through the United Nations Systems Influenza Coordination (UNSIC) group.
- Non Government Organisations such as the *Sikkim Anti-Rabies and Animal Health (SARAH)* program have a 'ground-up' approach and identify effective roles and training at the community level.



1st International
One Health Congress

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

Conclusions

The One Health approach:-

- **Recognises the interdependence** and need to improve human, animal and environmental health
- **Recognises that communication, collaboration and trust** between human and animal health practitioners is key
- **Has a broad vision** and includes economics and social behavior
- Needs to promote the 'doable' such as improving EID surveillance and response whilst developing the broader approach
- **Emphasizes community participation** and an open dialogue
- Requires both 'ground up' and 'top down' action
- **Recognizes that understanding ecosystems**, including molecular eco-biology, is an essential part of One Health.

And where to now?



NFID
Vaccine
Research
May 2011

- Research will continue to grow a One Health approach
- Training in One Health will require support and focus
- Engagement with fringe elements e.g. wildlife, ecologist will need significant support to fully engage
- At national and international level integration will be challenging – silos will continue to dominate
- Need One Health entities (Departments/Divisions/Ministries) at both national and international level for real change

International Society for One Health



NFID
Vaccine
Research
May 2011

- proposed at the Congress
- received strong support but with reservations
- focus on research collaboration and co-ordination
- focused journal for publications on One Health
- International Congress every two years (Thailand 2013?)
- meeting supported by World Bank in London (June 28th) to discuss concept further

And the implications for us today?



NFID
Vaccine
Research
May 2011

- One Health is here to stay!
- A system not a discipline approach
- Requires serious change in the way we work
- Requires serious change in what we “control”
- The risks from emerging disease are significantly increasing
- Where to intervene will require an intricate understanding of the system and what drives emergence
- Vaccination remains the most potent intervention to date!



**1st International
One Health Congress**

Human Health, Animal Health, the
Environment and Global Survival

Melbourne Convention Centre
Victoria, Australia
14 – 16 February 2011

www.onehealth2011.com

Abstracts of presentations at the
Congress can be accessed in a
special supplement of the
EcoHealth Journal: 2011, Volume
7, Supplement 1 and can be
accessed on line at
www.springerlink.com.

Many thanks