

# POULTRY HEALTH MANAGEMENT BEYOND 2010



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# Poultry Health

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- Based on :

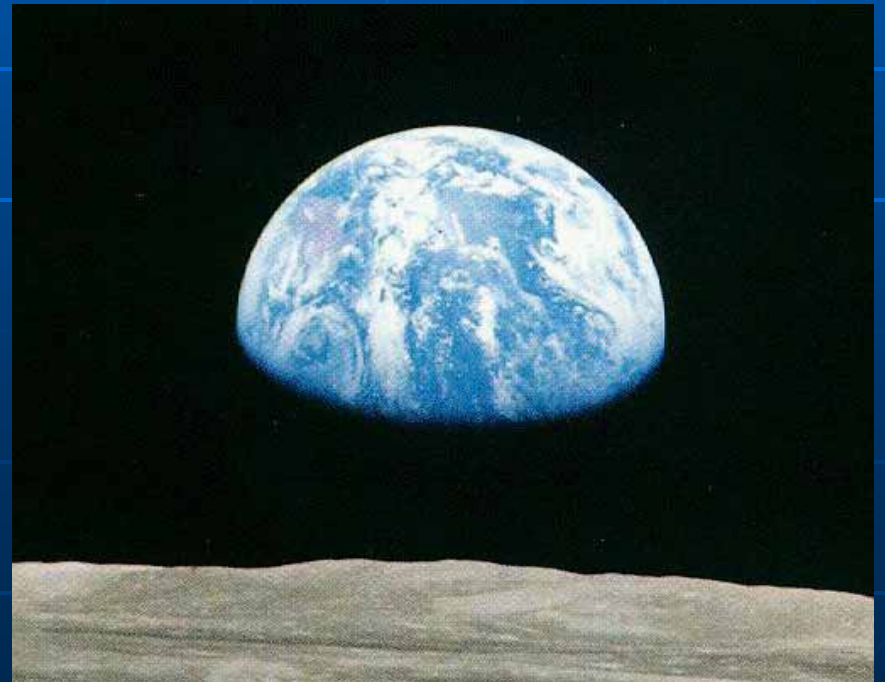
1. Disease control/ eradication
2. Vaccines for immunization
3. Rapid and accurate disease diagnosis
4. Antimicrobials for prophylactic and therapeutic purposes

“There is no place in the world from which we are remote and no-one to whom we are not connected.”

(Gideon Bruckner – DDG OIE)

# “One world – One health”

- Travel
- Global trade
- Illegal animal trade
  - – total annual value (US\$ 4-6 billion)
  - - 4 million birds



# “One world – One health”

- **Climate Change (Global Warming)**
  - de-forestation
  - floods and droughts
  - changes vector ecology (bluetongue in Europe)
  - changes migratory patterns (HPNAI H5N1?)
  - pathogens may adapt to new hosts
- **“Wildlife Factor”**
  - e.g. monkey pox, psittacosis, VHF – de-forestation
  - livestock and wildlife farming
  - “spillover and spill-back effect”

# “One world – One health”

- Diseases need to be seen in a broader context than just “animal” diseases.
  - 60% of human pathogens are zoonotic (i.e. originate from animals)
  - 80% of these have multiple animal host species
  - 75% of emerging diseases are zoonotic.

# “One world – One health”

- This requires a GLOBAL approach to disease control
- Some positive signs?
- Zoosanitary requirements principally used as trade barriers.



# Trade Barriers

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- Indonesia - Not Halal
- Israel - Not Kosher
- Korea - No barrier; loss of 30% of market
- Australia - IBD (70°C for 125")
- Avian Influenza, West Nile fever, Newcastle disease
- Romania – Get local press to bad mouth US quality

# Trade in Animal Products

- ❖ Trade in animals and animal products is based on a series of multilateral agreements or “Codes” of the OIE.



# Trade in Animal Products

- Trade in animals and animal based products is based on a series of intergovernmental agreements or “Codes” of the OIE.
- The most fundamental principle of the Codes is that of “equivalency”.
  - You cannot expect a country who wants to export to you to demonstrate superior health status to that which you can demonstrate. So if you are unsure of your disease status for a particular disease, you cannot insist that your imports be free from it.

# Trade in Animal Products

- In order to use the OIE regulations in the best national interests requires robust governmental support
  - OIE negotiations
  - local disease surveillance
  - local disease control & eradication
  - evaluation of import requests
  - nations with weak veterinary services lose in every way.
  - **NB** these functions cannot be executed by the private sector.

# Poultry Vaccines Today

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The backbone of poultry immunization remains those tools developed using classical bacteriology, virology, and immunology techniques.

Primarily live attenuated organisms, naturally occurring organisms of low virulence, and inactivated pathogens in an adjuvanted solution or emulsion.

# Recent Advances

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- Chemically induced mutants of pathogens
  - ex: *Pasteurella multocida*, MG, MS live vaccines
- Recombinant vaccines
  - Fowlpox Vector: Avian influenza, Newcastle  
ILTV, MG
  - Herpesvirus Vector: ILTV, Newcastle, IBDV
  - Newcastle Vector: Avian influenza
  - Gene deletion mutants – Salmonella

\*\*Many others developed or in development

# Barriers to Innovation

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## Current Vaccine Prices

- Large poultry companies have driven down the price of poultry vaccines through competitive purchasing.
- Poultry vaccines are marginally profitable compared to vaccines for other animal species.

# Barriers to Innovation

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## Current Vaccine Prices

- Many current vaccines sold as generic commodities at a very low price.
- Why would a poultry company pay 5-10 times more for a modern biotechnology based vaccine?

# Barriers to Innovation

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## Minimal Research Funding (developed world)

- Because poultry vaccines are not highly profitable, research funding within biologics companies has shifted to product development for other species.
- Research funding from government agencies has also diminished. Consequently university research programs have declined.

# Barriers to Innovation

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## Labour Costs

- Labour cost in most developed nations precludes injection of vaccines in the field for broilers. Vaccines which cannot be applied in the hatchery or by mass application in the field will have limited use.

# Barriers to Innovation

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## Patents

- Many vector systems and applications are patented. Inhibits research and product development. Patent issues can prevent the commercial use of developed products.

# Barriers to Innovation

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## GMO Controversy

- Has had minimal effect on vaccine usage. May become more important in the future if the consumers become more aware that genetically modified organisms are used as live vaccines.

# Barriers to Innovation

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- Much of the poultry vaccine market is controlled by large multinational biologics manufacturers.
- These companies seek to develop products which can be marketed globally.
- Inhibits development of products for regional markets.

# Disease Diagnostics

- Classical microbiological techniques
  - Will remain but continue to diminish
- Molecular techniques
  - Expect improved speed, accuracy, specificity
  - Better understanding of the disease process – immunology especially of gut and resp. tract.
  - New disease control options??
- Quality assurance/certification will improve
  - Barrier to new market entrants
  - Competent staff??

# Antimicrobials

- South African risk factors
  - Poor disease control or eradication – MG, MS *et al.*
  - Poor farming practices
  - Long-term, low dose prophylactic use in feed
  - Increasing bacterial resistance, reduced efficacy

# Antimicrobials

- South African risk factors (cont.)
  - “Off-label” use of drugs – dose, duration, specifics
  - Use of “grey” imports - ? quality
  - Antibiotic compounding
  - Poor controls of scheduled drugs
  - “Ambiguous advertising” of products

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