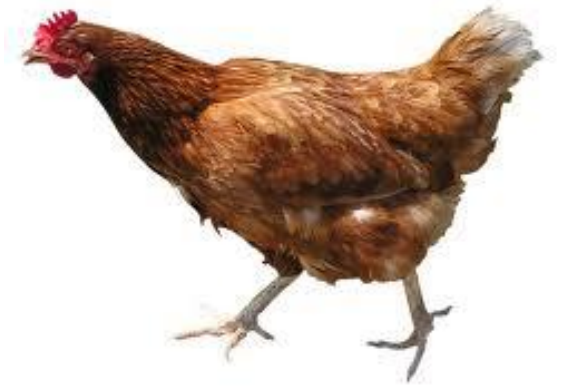


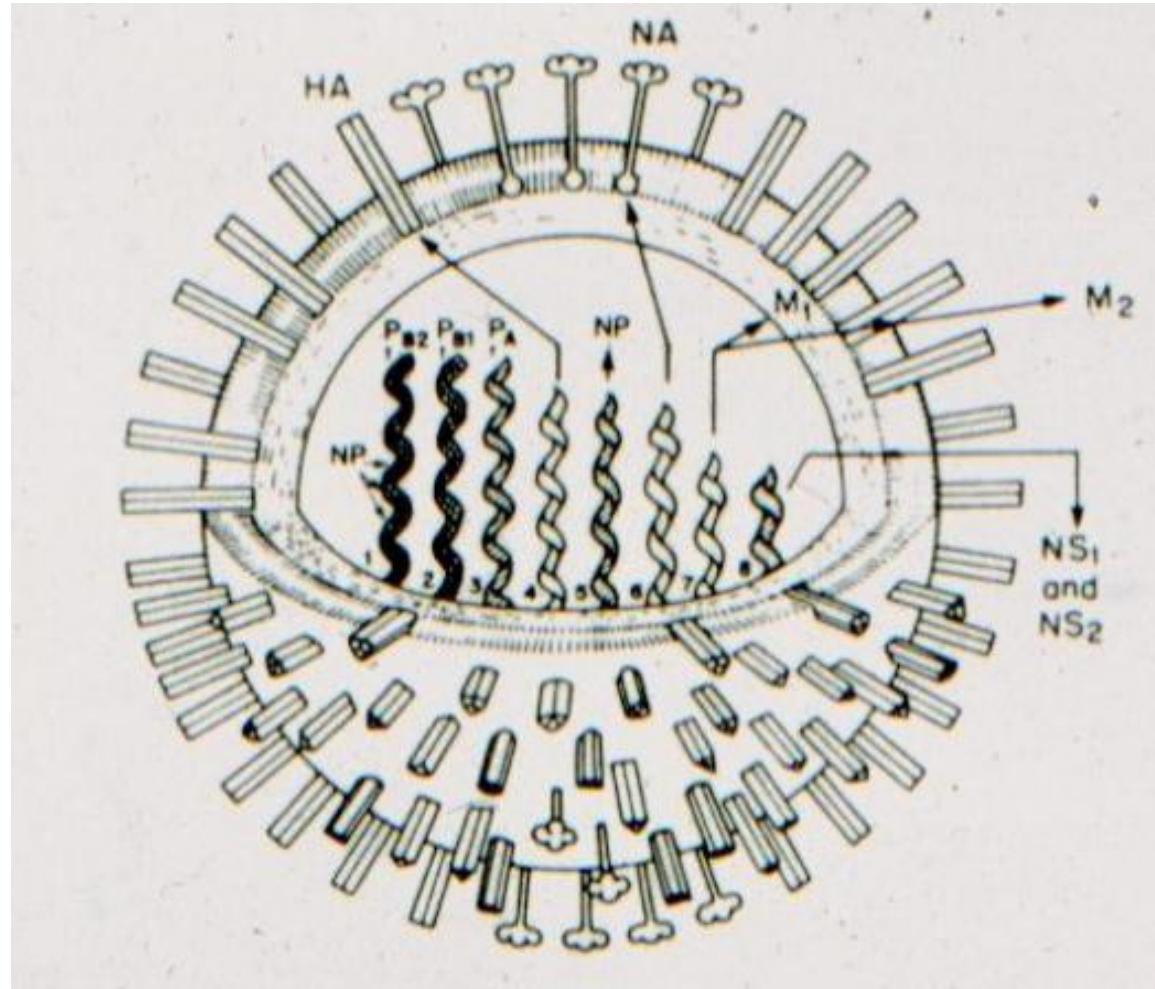
# Avian Influenza

Regional Workshops: Veterinary Discussion

**Will Garton**



# What is Avian Influenza?



# Influenza virus types



A	BIRDS, MAMMALS (including humans, pigs, horses, mink, sea mammals etc)
B	HUMANS
C	HUMANS & PIGS

# Influenza Type A Surface Antigens



Haemagglutinin																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Human	•	•	•													
Equine			•				•									
Swine	•		•													
Avian	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Neuraminidase																
	1	2	3	4	5	6	7	8	9							
Human	•	•														
Equine							•	•								
Swine	•	•														
Avian	•	•	•	•	•	•	•	•	•							

# Generally recognised clinical signs



## Respiratory signs

- Coughing, sneezing, ruffled feathers, swollen heads

Nervous signs like depression

Diarrhoea

Egg Drop

Mortality

Each outbreak will show different levels of pathogenicity



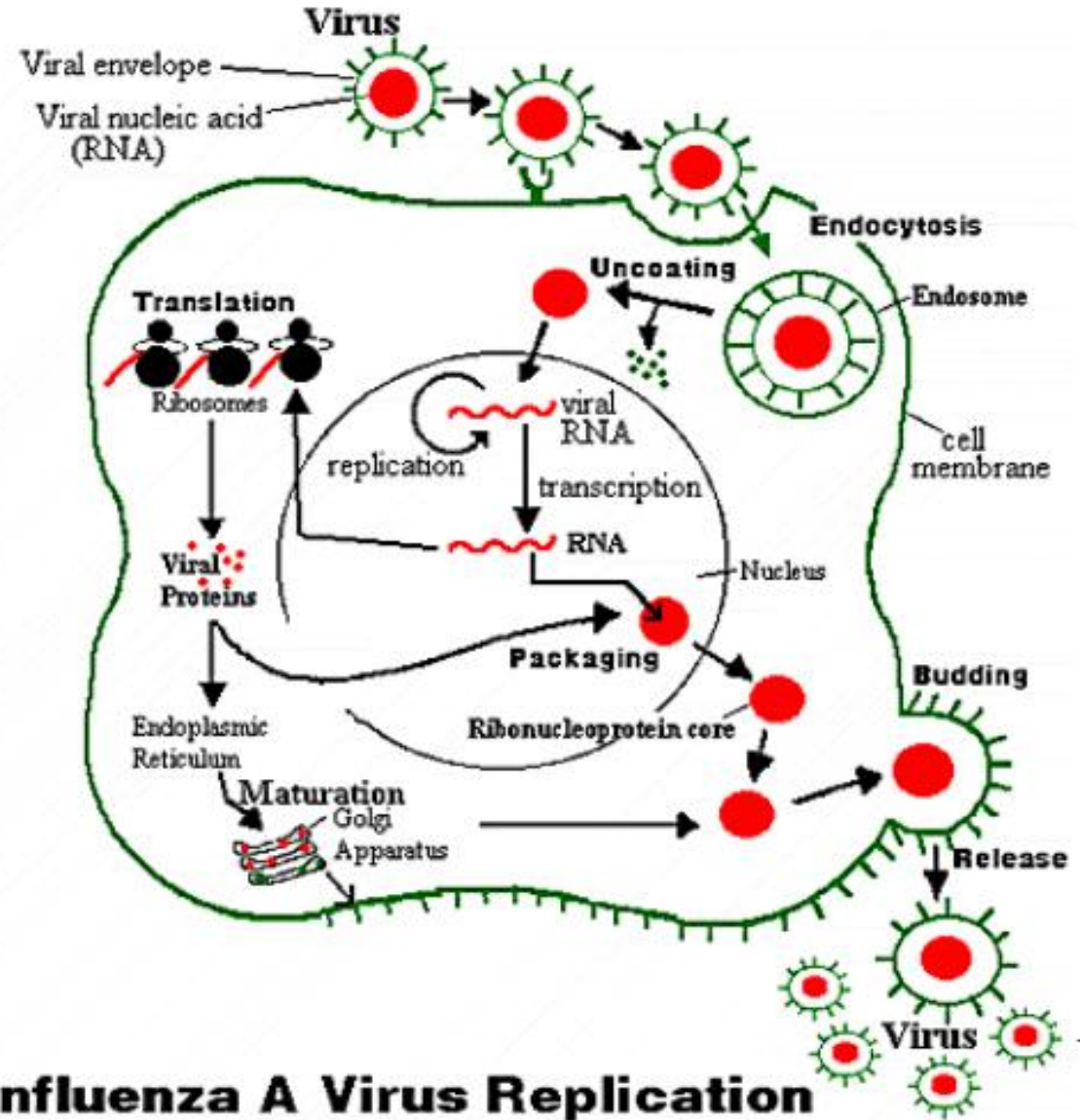
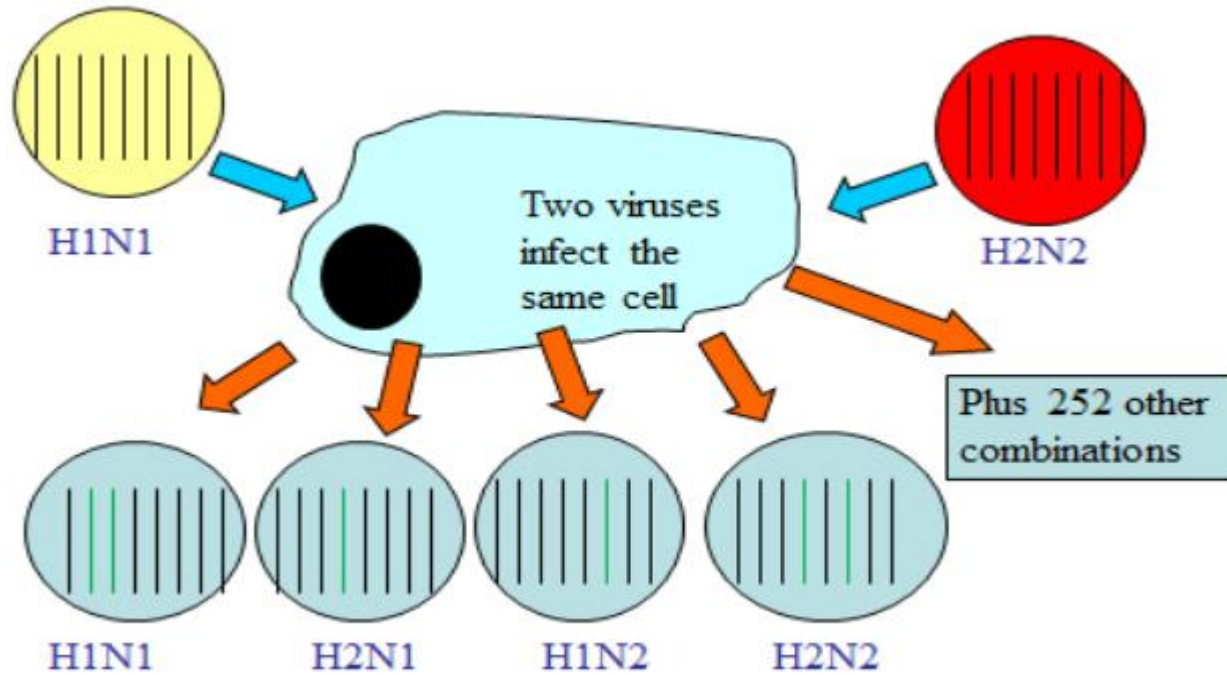
# Species Affected



- Will infect, but not necessarily affect all breeds of avian
- Turkeys are most susceptible to mortality
- Waterfowl, esp. ducks, may carry disease with no mortality and no clinical signs, especially if it is low pathogenic.



# Replication and Reassortment



**Influenza A Virus Replication**





# Two Pathotypes of Influenza in Poultry

## Highly Pathogenic

- severe disease
- high mortality up to 100%
- to date only[but not all] viruses of H5 or H7 subtype

## Low Pathogenicity

- mild respiratory disease, depression, egg production problems
- may exacerbate other infections/conditions

# Pathogenicity



Current theories are that mutation from LPAI to HPAI takes place AFTER introduction of the LPAI virus to poultry from wild birds.

Garcia et al (1996), Perdue et al (1998)

# Epidemiology

## Conventional

- wild bird reservoir of LPAI
- spread to poultry
- some LPAI viruses mutate to HPAI

# Introduction



## Geographical location

Contact between wild birds and poultry

(either direct or indirect)

Farming systems and management practices

# Introduction and Spread



- Bodies of water
- Mixed species encourages introduction
- Encouraging waterfowl

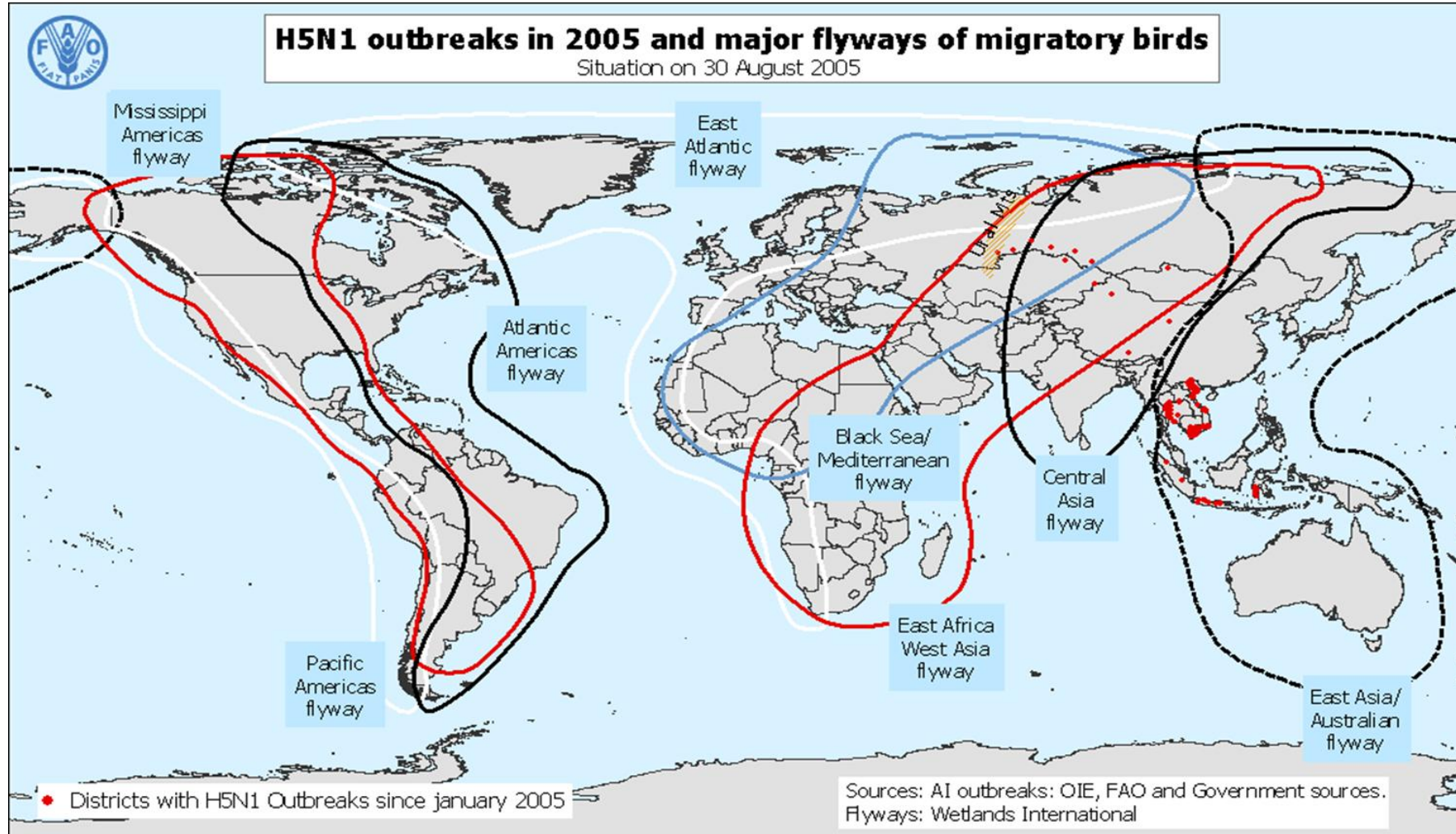
**>10<sup>7</sup>infectious particles per gram**  
of faeces excreted from infected  
chickens and that infectivity could  
be retained in faeces for **> 44 days**



# Transmission

- All cases of HPAI initially originate from LPAI (importance of surveillance)
- Disease spread directly from infected birds to susceptible birds
- Contact with infected respiratory secretions
- Infected droppings
- Fomites
- Low risk of spread on the wind

# Migratory Flight Pathways





# Why is it Notifiable?

- Zoonotic (i.e. it can affect humans), though normally the signs are mild. Conjunctivitis
- Potential to recombine with human Flu virus
- Massive mortality levels. 80% dead within 24 hours is a common finding
- Economic Loss
- Impact on export status, hence trade

# Biosecurity



## Difficult to control wild bird population

- Sites should be kept away from standing water, which might attract waterfowl
  - (and don't allow birds access to pond / lake water as drinking water!)

## Difficult to control airbourne spread

- Try not to excite potentially affected birds as increased respiratory rate, therefore, increased numbers of virus particles released



# Biosecurity



The major way virus enters and passes through a flock is via faeces.

Free range flocks are more at risk, because we cannot avoid wild bird faeces

# Biosecurity



First we must try to decrease the potential of viruses gaining access to the site

- No non-essential visitors on site
- All essential visitors must consider hygiene
  - Shower on / shower off
  - Separate overalls
  - Separate boots
    - One electrician responsible for Mycoplasma infection of 3 sites

# Biosecurity



Keep vehicular access to the site to an absolute minimum

- Pressure spray and disinfect wheels

Consider all vehicles

- Feed
- Egg collection
- Catching
- Postman

# Biosecurity



Try not to share equipment with other avian operations

- Egg collection trolleys
- Keyes trays
- Vaccination equipment

# Biosecurity



## Control all animal movement

- No pets
- Rodent control
- Clear all spilt feed – rodents and wild birds
- Extreme care with brood and move operations, especially if brood manager reports anorexia

# Biosecurity



Then try to control entry into sheds

- Clean boots for each shed
- Footdips
  - Keep them fresh, and use them
- Keep bedding covered before taking into the shed
- Etc., etc., etc.

# Control



Council Directive 2005/94/EEC

Confirmation Requires:

- Slaughter
- Disposal of carcasses and all poultry products
- Disposal of contaminated materials
- Disinfection
- Epizootiological investigation