

Newcastle disease virus and highly pathogenic avian influenza virus introduction risk routes in high biosecurity floor reared poultry

Caroline Warren Marek Slomka, Saumya Thomas, Sahar Mahmood, Joe James, Alex Byrne, Samantha Watson, Alejandro Nunez, Fabian Lean, Craig Ross, Sharon Brookes, Ashley Banyard, Rowena Hansen, Ian Brown.

Animal and Plant Health Agency (APHA)



16 Sept 2021

Isolates

NDV	Genotype VII.2	APMV-1/domestic fowl/Cyprus/632/2015	NDV-2015
HPAIV	Clade 2.3.4.4b	A/wigeon/Wales/052833/2016	H5N8-2016

NDV-2015



Possible breakthrough
In 2015, co-circulating in Bulgaria

Threatens



H5N8-2016



Onward spread
Autumn wild bird migration

Widespread infections





Experimental design



NDV-2015

1 Room 2 pens

White Leghorns Aged 12 weeks

- High dose controls i.n. (C)
- High dose in water (W)



H5N8-2016

2 Rooms 5 pens

Ross 308 Broilers Aged 3 weeks

- High dose controls i.n. (C)
- High dose in water (W)
- Low dose in water (*w*)
- High dose in feed (F)
- Low dose in feed (*f*)

Conclusions



Different environmental contamination routes have different outcomes

Water

Simple matrix

Live NDV, HPAIV added to water based media is recoverable from cell monolayers for weeks

Host exposed to NDV/ HPAIV contaminated water can cause infection

Contaminated water is a high risk matrix

Feed

Complex matrix

Live NDV, HPAIV added to feed is recoverable from cell monolayers for 24 hours

Host exposed to HPAIV in feed – unaffected

Contaminated feed is a lower risk matrix

**This evidence can support policy formulation for
future veterinary risk assessments**



Animal &
Plant Health
Agency

APHA acknowledgements

DELTA-FLU



Department
for Environment
Food & Rural Affairs

**Virology
Animal Sciences Unit**

**Pathology
Veterinarians**



Funding

Defra and the devolved governments of Wales and Scotland

SE2208 NDFUTURES and SE2211 FLUFUTURES:

Reducing Newcastle disease and Influenza A Virus (avian & mammalian) hazards in the UK

Delta-Flu EXEU 1620



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727922.



OGL

© Crown copyright 2021

