



Layer Sector Update: Salmonella Control Antibiotic Stewardship

Paul Mc Mullin MVB MSc DPMP DipIECPVS FRCVS
Poultry Health International
paulmcmullin@poultryhealthinternational.net

1



Agenda:

- Salmonella outbreaks as identified by WGS
- Presumptive epidemiology
- Defining 'flocks'
- Lion code updates and other actions

2



SE in Poultry – Types

- July 17 – 2 flocks of layers PT8 positive
- Nov 17 – 1 flock of layers PT4 SE positive
- December 17 - 2 flock of layers, late lay PT4 positive
- 2017-2019 – PT8 Human-associated Cluster 1 (5 sites)
- 2019 – PT8 Cluster 2 (2 sites)

3



4



Use of WGS - PHE

- PHE have been routinely applying WGS to all isolates they had since April 2014
- They have been actively applying the results to surveillance since April 2015
- Database includes around 45000 isolates
- This includes human cases as well as food, water, environmental positives found in public health laboratories.

5



Use of WGS - APHA

- Isolates supplied to PHE lab on request since about 2016
- Initially this was focussed on particular 'projects' – e.g. when multiple cases occurred in animals
- Since early 2018 it has been routine to submit all isolates of *S. Enteritidis* and *S. Typhimurium*

6



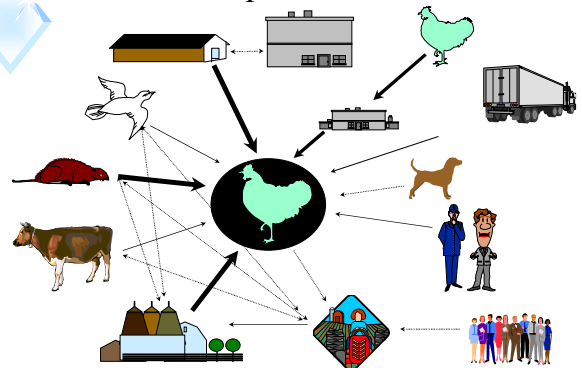
Key points – Cluster 1

- Initial human case was associated with travel to a non-EU country (>1 year before first poultry infection) – no known poultry association.
- This “Outbreak” was only identifiable by WGS
- The initial poultry case was <40 weeks when identified – kept in lay because of egg scarcity in Europe because of Fipronil Issue
- Subsequent cases were all over 65 weeks of age when identified

7



Salmonella sp. in Chickens



8



What is a flock?

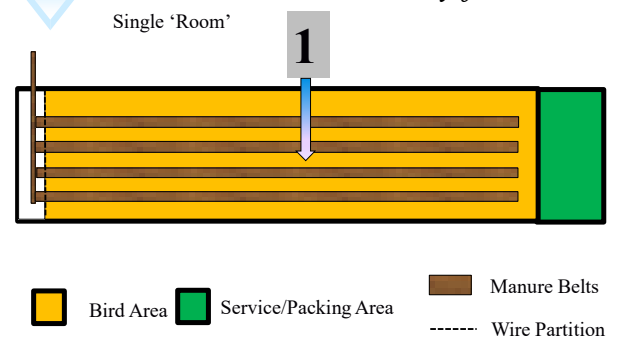
- 1. A group of birds housed in the same air space.
- 2. A group of birds having access to multiple airspaces and/or common range (Lion - up to 6000 birds or 6 mobile houses). Note: at least 1 boot or hand swab/house!
- Flock definition for a particular site should be the same for producer and official samples.

9



Multi- Tier - How many flocks?

Single ‘Room’



10

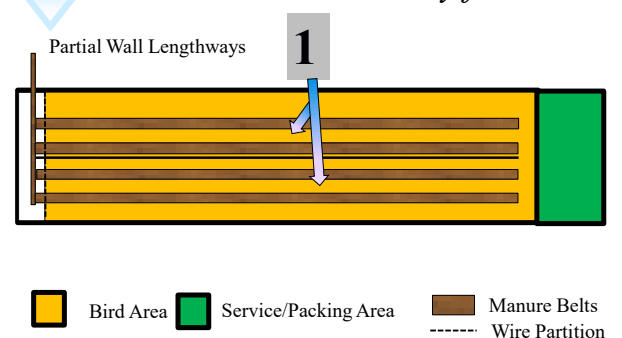


11



Multi- Tier - How many flocks?

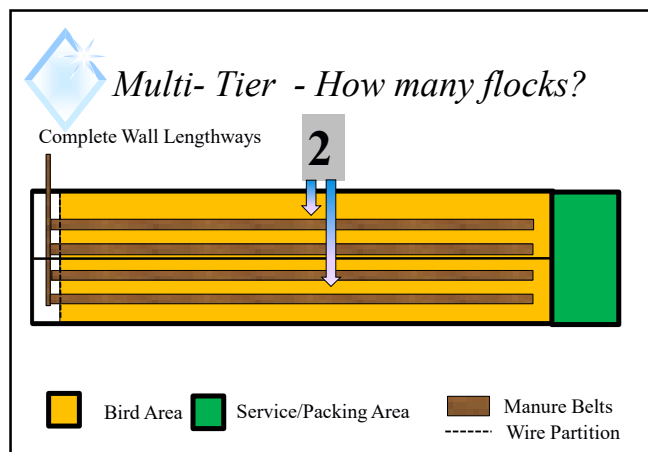
Partial Wall Lengthways



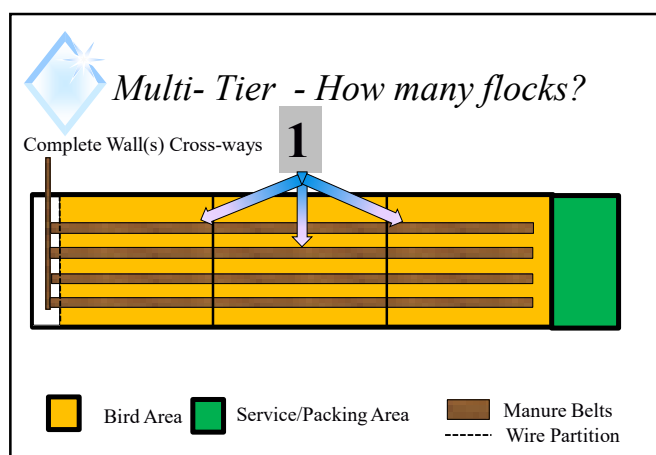
12



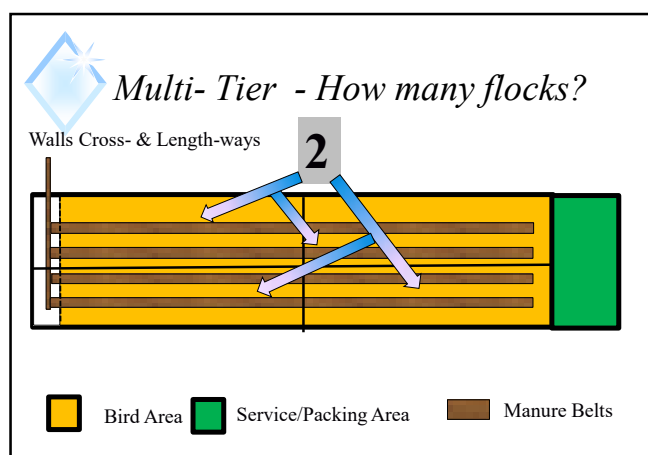
13



14



15



16

But also please note:

- Unusual designs may require a specific definition, though in accordance with the principles illustrated here.
- 'Beak-to-beak' contact outside does not make it one group.
- Where there are sub-units the producer may choose to do his samples from each sub-unit.
- If positives occur restrictions may be applied across different flocks regardless of routine definition
- All sub-units (where present) must be sampled (for belt swab samples the belt should have been run soon before sampling, without cleaning of scrapers).

17

Lion Laboratories Listing

- Working with Defra approved labs and APHA
- Reducing discrepancies between official and producer sampling apparent sensitivity
- Consistency of approach driven by a minimum customer requirements specification
- Focus on issues identified during investigations

18



Vaccination

- Working with vaccine manufacturers to increase auditing of vaccine application
- Trial to assess late-lay immunity of brown egg layers (of about 65 weeks of age) (APHA/Fera Sandhutton)
- Groups
 - Controls – 3 doses live vaccine in rear only
 - Live – 3 doses live in rear – revaccinated with live vaccine (Avipro Duo)
 - Inactivated – 3 lives in rear, revaccinated with dead vaccine (Salenvac T)

19



Amendments to Lion Code of Practice V8

- Interval of testing in lay – 13 weeks
- Egg testing – same quarterly interval but by flock, not site
- Revised guidance issued on flock identification – especially in relation to multi-tier systems
- Packing centres – increased environmental monitoring
 - Equipment as before after C&D, now also cleaning equipment
 - Floors and crate/pallet washers, before C&D – Sentinel role
- Detailed guidance re cross-species risk, co-grazing
- Updated annexe I, requirements for dealing with positive flocks
- Detailed guidance dealing with 'missing samples/results'

20

20



Increased Verification Sampling

- Spring 2019 – all flocks over 70 weeks of age – producer sampling at 4 week intervals
- Autumn 2019 – ongoing
 - NSF auditors now sampling every flock
 - One flock to APHA Newcastle (official)
 - Others to selected approved labs (verification)

21



Agenda 2:

- BEIC Medicines Recording Scheme
- Analysis 2016 to 2018
- RUMA Task Force Targets
- New online recording system

22



ruma
GUIDELINES

Poultry and Game

Responsible use of antimicrobials in poultry and game production

RUMA guidelines for the responsible use of antimicrobials by poultry and game farmers have been designed to provide quick and easy-to-read guiding principles that can be used by poultry and game producers.

Antimicrobials have made a major contribution to improving the health and welfare of poultry and game for several decades. They are vital medicines for the treatment and control of bacterial infections in poultry and game.

23



EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

Answer to the request from the European Commission for updating the scientific advice on the impact on public health and animal health of the use of antibiotics in animals - Categorisation of antimicrobials

Adopted by the CHMP for release for consultation:	31 January 2019
Start of public consultation:	5 February 2019
End of consultation (deadline for comments):	30 April 2019

24

Proposed Categories

- A – (Avoid) – not licensed in food animals
- B – (Restrict)
 - Quinolones, including FQ's, 3rd and 4th generation Cephalosporins, and Polymyxins
- C – (Caution)
 - Macrolides, Pleuromutilins, Lincosamides, Aminoglycosides, 1st/2nd Generation cephalosporins, Amphenicols.
- D – (Do use Prudently)
 - Penicillins/Aminopenicillins (without B lactamase inhibitors), Bacitracin, Tetracyclines, Sulphonamides

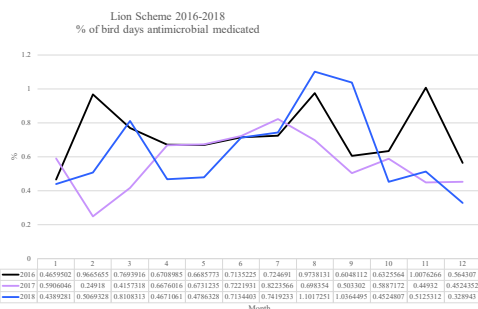
25

Basis of data collection/analysis

- No 'Defined Daily Dosage' for commercial layers
- So we use Actual Daily Doses administered:
 - Farm treated 1000 birds for 4 days and 500 birds for 7 days – the number of days treated = $(1000 \times 4) + (500 \times 7) = 7500$
 - If the farm in total had 1000 birds on the farm for the whole year – bird days at risk = $(1000 \times 365) = 365000$
 - Then the "% bird daily doses" = $(7500/365000) \times 100 = 2\%$

26

% Treated bird-days by Month Target : <1%



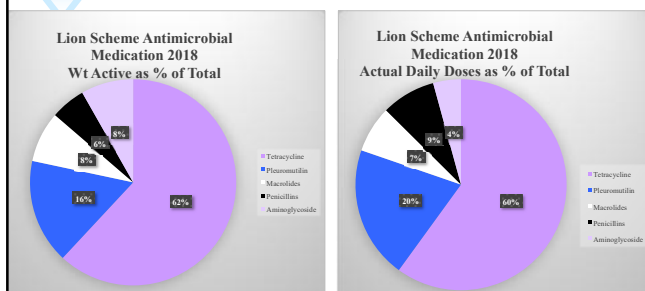
27

Usage by Class, 2018

	2016 million doses (%)	2017 million doses (%)	2018 million doses (%)	% Change (2016-2018)
Tetracyclines	45.1 (40)	48.1 (55)	60.7 (60)	+35
Pleuromutilins	43.0 (38)	25.7 (29)	20.5 (20)	-52
Penicillins	9.2 (8)	8.6 (10)	8.4 (8)	-9
Macrolides	7.5 (7)	3.3 (4)	7.1 (7)	-3
Aminoglycosides	2.8 (2)	1.7 (2)	4.3 (4)	+54
Other, includes: Fluoroquinolones* Colistin*	0.3 4.3 (4)	0 0	0 0	-100
Total	112.1	87.5	101.1	-10

28

Lion Scheme Antimicrobial Medication 2018 Wt Active as % of Total



29

Reasons For Medication (807, Recs 72%)

Indication	Days Medicated	% of total
Enteritis	16329208	23.5
Colibacillosis	10910890	15.7
Peritonitis	8044210	11.6
Mycoplasma gallisepticum	7691462	11.1
Mycoplasma	3776880	5.4
Bacterial Infection /Septicaemia	3564900	5.1
Spotty Liver	3367750	4.9
Brachyspira	3201639	4.6
Pasteurellosis/Fowl Cholera	3037500	4.4
Ornithobacterium	2944742	4.2
Mycoplasma sinoviae	2809080	4.1
Erysipelas	1451390	2.1
Yolk sac infection/omphallitis	902050	1.3
Clostridiosis	723325	1.0

3 Indications account for ----->71.5%

30



RUMA TTF2 – going forward

- BEIC will maintain the sector target of percentage bird days treated remaining below 1%.
- Industry focus on disease prevention, including widespread vaccination programmes, will continue.
- BEIC are already starting to collect data on reasons for medication which will allow it to provide feedback to prescribing veterinarians.
- New IT system accessible to subscribers to facilitate data validation of data in real time going forward. This is in use for routine data collection from January 2020.

31



Agenda:

- **Salmonella Control**
 - Salmonella outbreaks as identified by WGS
 - Presumptive epidemiology
 - Defining 'flocks'
 - Lion code updates and other actions
- **Antimicrobial use monitoring**
 - BEIC Medicines Recording Scheme
 - Analysis 2016 to 2018
 - RUMA Task Force Targets
 - New online recording system

32



Questions ?

33