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News

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Salmonella levels in laying hen flock holdings across the European Union: final report published

Salmonella levels in laying hen flock holdings across the European Union: final report published

The European Food Safety Authority (EFSA) has published the final version of their study on Salmonella levels in layer flock holdings across the European Union (EU) [1], following up on their earlier preliminary report published in June 2006 [2]. Tests on dust and other material found in poultry houses, as well as bird faeces, indicates the levels of *Salmonella* spp. on the holding. Sampling of the holdings was done between 1 October 2004 and 30 September 2005. The baseline results from this study have provided the scientific basis on which to set targets for the reduction of salmonella prevalences in EU commercial laying flocks [3], which should in turn lead to less salmonella contamination of eggs.

Salmonella spp was detected in 1486 holdings in the EU. This resulted in a Community weighted observed *Salmonella* spp. holding prevalence of 30.8% (95% CI= 29.8% - 31.8%). There was large inter-country variation, ranging from a minimum of 0% (Luxembourg and Sweden) to a maximum of 79.5% (Portugal). The presence of *S. Enteritidis*/*S. Typhimurium* was detected in 986 holdings in the EU. This resulted in a Community weighted *S. Enteritidis*/*S. Typhimurium* observed holding prevalence of 20.4% (95% CI= 19.5% - 21.3%) with a range from 0% (Ireland, Luxembourg, Latvia, and Sweden) to 62.5% (Czech Republic).

Of all the member states, the United Kingdom showed the sixth lowest observed holding prevalence for *Salmonella* spp, with 11.9% (95% CI= 9.9% - 14.7%). The holding prevalence for the two most common serovars *Salmonella* Enteritidis and/or Typhimurium was 7.9% (95% CI= 6.2% - 10.1%). These proportions for the UK compare favourably with most of the other EU Member States.

Salmonella contamination was more likely to be identified on holdings with larger numbers of laying birds than those with fewer birds, although this might reflect the sampling method. Vaccination of the hens in the flock against Salmonella was associated with a lower risk of being Salmonella positive, except for holdings infected with *S. Typhimurium*. There will be mandatory vaccination of layer hens against Salmonella from 2008 onwards for layer hen holdings in Member States with a Salmonella prevalence of 10% or more [3].

Due to the design of the study, which resulted from the pragmatic decision to sample only one flock per holding, the true holding prevalence is likely to be higher than the observed, as some of the holdings detected negative may house one or more positive flocks that were not sampled and hence not detected. The observed Salmonella prevalences in the study are likely to be underestimated, but despite this they are generally higher than those reported in national zoonoses reports by the Member States, where a variety of monitoring methods are used.

Thirteen Member States submitted additional information on the antimicrobial susceptibility of Salmonella isolates. In general, a higher proportion of antimicrobial resistant isolates was reported for *S. Typhimurium* than for *S. Enteritidis* and other serovars. No isolates from UK flocks were resistant to ciprofloxacin or cephalosporins, which are the most likely to be used for severe salmonella infections in humans.

In Europe, Salmonella is now controlled in the egg production chain under Regulation (EC) No 1168/2006 [4]. Every Member State will have to work towards reducing the number of laying hen holdings contaminated with Salmonella by a specific minimum percentage each year, with steeper targets for Member States with higher levels of Salmonella. The first target deadline is set for 2008. It is also planned under this Regulation that from January 2010, eggs from Salmonella infected flocks will be treated in a manner that guarantees the elimination of Salmonella, e.g. the heat treatment of contaminated eggs. Contaminated eggs will therefore be required to be sent for processing into egg products.

Information

Salmonella is an important cause of foodborne disease in humans throughout the world and is a significant cause of morbidity, mortality and economic loss. Hens' eggs which are derived from flocks infected with *Salmonella* Enteritidis are an important source of human infections due to this serovar. *S. Enteritidis* is the serovar which causes more than 50% of human infections with Salmonella in the EU. The second most reported serovar in humans is *S. Typhimurium*, which is less often associated with the consumption of hens' eggs.

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Immunisation

Next update: **23 March 2007**

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- ▶ Invasive meningococcal infections, England and Wales: laboratory reports, weeks 01-07 2007
- ▶ Laboratory Reports of *Haemophilus influenzae* by age group and serotype, England and Wales: October to December 2006 (2005)
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Invasive meningococcal infections, England and Wales: laboratory reports, weeks 01-07 2007

Please note that the data in this table contains errors. Please view the corrected data in HPR Vol 1, Issue No.25, 22 June 2007 available at:

<<http://www.hpa.org.uk/hpr/archives/2007/hpr2407.pdf>>.

	Method of diagnosis			Total reports	Cumulative*
	CSF and blood Culture	Non-culture	Other sites	01-05/06	Total to week 05/2007
Group A	–	7	–	7	7
B	–	7	–	7	7
C	–	1	–	1	1
W135	–	–	–	–	–
X	–	–	–	–	–
Y	–	–	–	–	–
Z/29E	–	–	–	–	–
Ungroupable	–	–	–	–	–
Ungrouped	–	1	–	1	1
Total	–	16	–	16	16

*Latex antigen, microscopy, polymerase chain reaction combined Health Protection Agency Centre for Infections data and Meningococcal Reference Unit data.

Laboratory Reports of *Haemophilus influenzae* by age group and serotype, England and Wales: October to December 2006 (2005)

Type	Age					Total
	<1y	1-4y	5-14y	15+	nk	
b	3(1)	6(4)	3(-)	6(10)	-(-)	18 (15)
nc	3(6)	3(4)	3(1)	28(21)	-(-)	37(33)
a,e,f	1(2)	4(4)	-(-)	4(8)	-(-)	9(14)
not typed	1(1)	1(1)	3(1)	11(15)	-(-)	16(18)
Total	8(10)	14(13)	9(2)	49(51)	0(1)	80(80)

Figures in brackets are for quarter 4 2005.

Laboratory confirmed pertussis reported to the enhanced pertussis surveillance programme in 2006

There were 423 laboratory confirmed cases of pertussis reported to the pertussis enhanced surveillance programme in 2006. This represents a 9% increase on the 389 cases reported in 2005.

A decrease was seen in the number of cases diagnosed by 'culture only' in 2006 compared to 2005. The overall increase in cases was due to an increased number of confirmations by 'serology only' (table 1) .

Table 1 Laboratory confirmed cases of pertussis in England and Wales in 2006 by quarter

Quarter	Culture only	PCR only	Serology only	Culture and Serology	PCR and Serology	Culture and PCR	Oral only	Total
Q1	26	5	23	-	-	-	2	56
Q2	23	5	26	-	-	-	-	54
Q3	36	1	158	3	1	-	5	204
Q4	17	1	81	-	-	2	8	109
Total	102	12	288	3	1	2	15	423

In quarter three of 2006 a large increase in serology confirmations was observed, resulting in a confirmed cases total of approximately four times each of the totals for quarters one and two. It should be noted, however, that serology is generally used for later diagnosis of a prolonged cough, hence many of the cases reported in quarter three are likely to have had onset in quarter two. In contrast, culture and PCR diagnostic methods are used at an earlier stage in the illness and therefore the date of laboratory confirmation is closer to the date of onset.

The increase in serology confirmations is thought to be due to increasing awareness of pertussis occurring in older children and adults [1], and of the availability of this diagnostic method [2]. It also reflects ascertainment of cases in clusters and outbreaks.

Caution should be exercised in interpreting trends both in the number of infections and in the age distribution of pertussis. Serology is usually used for the diagnosis of pertussis in adolescents and adults, as reflected in the age distribution of cases observed for quarters three and four when compared to quarters one and two (table 2). Diagnosis based on examination of oral fluid [3] is proving to be a very useful additional means of enhancing surveillance, by improving individual case ascertainment and in the investigation of outbreaks. Oral fluid diagnosis is currently only available on request for specific incidents.

Table 2 Age distribution of cases of pertussis in England and Wales in 2006 by quarter

Age group	Q1(%)	Q2(%)	Q3(%)	Q4(%)	Total number	Total (%)
<3 months	19 (33.9)	18 (33.3)	18 (8.8)	11 (10.1)	66	15.6
3-5 months	7 (12.5)	6 (11.1)	6 (2.9)	2 (1.8)	21	5.0
6-11 months	– (–)	1 (1.9)	3 (1.5)	2 (1.8)	6	1.4
1-4 years	5 (8.9)	3 (5.6)	11 (5.4)	5 (4.6)	24	5.7
5-9 years	3 (5.4)	2 (3.7)	14 (6.9)	8 (7.3)	27	6.4
10-14 years	8 (14.3)	8 (14.8)	43 (21.1)	22 (20.2)	81	19.1
≥15 years	14 (25.0)	16 (29.6)	109 (53.4)	59 (54.1)	198	46.8
Total	56	54	204	109	423	

PCR, serology, and oral fluid diagnostic facilities are provided by the HPA's Centre for Infection's Respiratory and Systemic Infection Laboratory (RSIL). The pertussis reference facility was established in 2002. Further information is available on the HPA website <<http://www.hpa.org.uk/cfi/rsil/bordetella.htm>>.

Note: data for the fourth quarter of 2006 may be incomplete due to late reporting

Previous pertussis CDR report: Laboratory confirmed pertussis reported to the enhanced pertussis surveillance in the fourth quarter of 2005 and annual totals available at: <<http://www.hpa.org.uk/cdr/archives/2006/cdr3406.pdf>>

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