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Quality Statement

SECTION A

1. Coherence

Reports are obtained by various routes: direct submissions to VLA Regional Laboratories, submissions of avian isolates to the VLA serotyping centres, reports of *Salmonella* isolations by private laboratories and Scottish submissions to Scottish Agricultural Colleges.

VLA is responsible for collation of data. Submissions result from investigation of clinical disease in livestock, voluntary monitoring of healthy livestock for *Salmonella*, compulsory monitoring of chicken breeding flocks for *Salmonella* under the Poultry Breeding Flocks and Hatcheries Order 1993 (superseded by the Poultry Breeding Flocks and Hatcheries Order 2007 on March 7th 2007), follow-up investigations of *Salmonella* incidents under the Zoonoses Order 1989 and investigations of possible links with a human *Salmonella* outbreak.

All private laboratories submitting reports of *Salmonella* isolates to VLA do so using the standard VLA submission & Supplementary forms or customised forms developed for them by VLA. Scottish submissions use the SAC submission form & supplementary forms which are compatible with the VLA system and interpreted in the same way. All use the same definitions and essential categorisation. The PBFHO authorised laboratories must comply with legislative requirements and are subject to inspections by VLA.

Only approved submissions (submissions with no pending results) are included in this report.

A sensitivity test is performed for surveillance purposes against an extended panel of 16 antimicrobials on *Salmonella* isolates sent for serotyping to VLA Weybridge and VLA Lasswade.

	Antimicrobial	Concentration (µg per ml)	Code
1	Nalidixic acid	30	NA
2	Tetracycline	10	T
3	Neomycin	10	N
4	Ampicillin	10	AM
5	Furazolidone	15	FR
6	Ceftazidime	30	CAZ
7	Sulphamethoxazole/trimethoprim	25	TM

8	Chloramphenicol	10	C
9	Amikacin	30	AK
10	Amoxicillin/clavulanic acid	30	AMC
11	Gentamicin	10	CN
12	Streptomycin	25	S
13	Sulphonamide compounds	300	SU
14	Cefotaxime	30	CTX
15	Apramicin	15	APR
16	Ciprofloxacin	1	CIP

This panel is updated when there is a clear need to detect new or emergent types of resistance or to replace outdated antimicrobials. On specific occasions (e.g. detection of *Salmonella* vaccine strains, characterisation of 3rd generation cephalosporins resistance) more than 16 antimicrobials are used for sensitivity testing.

From 1st January 2007 some of the breakpoints used in assessing antimicrobial resistance, which were previously set at less than or equal to 13, have changed. These new breakpoints are: Ceftazidime (CAZ) less than or equal to 27, Amikacin (AK) less than or equal to 18, Ciprofloxacin (CIP) less than or equal to 19 and Cefotaxime (CTX) less than or equal to 29. This may result in a decreased number of isolates resistant to these antimicrobials in 2007 in comparison with previous years. The breakpoint for all other antimicrobials used remain at less than or equal to 13.

Some of the *Salmonella* serotypes are recorded and reported in VLA under the old nomenclature. The nomenclature for these serotypes under the Kauffmann-White scheme is clarified in the following table:

VLA Serotype

Pullorum
Binza
Thomasville
Java

Kauffmann-White

Gallinarum biovar Pullorum
Orion 15+var
Orion 15+34+var
Paratyphi B var Java

2. Accuracy and precision

Sampling error: Isolations of *Salmonella* from statutory species are required to be reported, however this depends on submission of samples for laboratory investigation by private veterinarians as well as on economic factors e.g. distance to laboratories etc. The sample type and frequency of compulsory monitoring of chicken breeding flocks is defined in the Poultry Breeding Flocks and Hatcheries Order 1993 (superseded by the Poultry Breeding Flocks and Hatcheries Order 2007 on March 7th 2007), but voluntary testing may also be carried out.

A sensitivity test is performed to *Salmonella* isolates before the allocation of an automatic incidence reference by the computer system. It is important that the information on whether the submitted isolates are considered to comprise new incidents is provided to the testing laboratory. As some companies perform extensive testing for *Salmonella*, this could skew the overall sensitivity data leading to the patterns obtained to reflect the intensity of sampling procedure.

Coverage error: The reasons for sample submissions need to be considered, as sources of error can be dependent on this factor. Also the ability to isolate *Salmonella* needs to be considered (dependent on sample type taken, age of sample, storage and transport, culture method used, laboratory staff technical expertise etc).

Non-response error: Although all *Salmonella* isolations from statutory species are required to be reported, not all data items requested are mandatory under the Zoonoses Order 1989. Different categories of submissions may have different non-response rates for different data items.

Measurement error: Different *Salmonella* culture methods vary in their sensitivity, which varies according to sample type, type of *Salmonella* present and profile of competitive flora in the sample. Data on the VLA and SAC forms may be subject to individual interpretation by the person submitting the information, despite the guidance to authorised personnel.

Only approved test results are included. Data are scrutinised to remove errors in false positives for strategically important isolates (e.g. resistant to 3rd generation cephalosporins). It is not expected to see resistance to amikacin, ciprofloxacin, ceftazidime or cefotaxime in any isolate. If any appears, it is verified at the time of detection.

Both laboratories at VLA Lasswade and VLA Weybridge that perform the expanded susceptibility testing have the UKAS accreditation.

Data processing error: Non-mandatory information may be difficult to obtain. It is the responsibility of the Nominated Officer to ensure that the data are accurate and complete. A validation exercise is carried out on a weekly basis at the VLA Regional Laboratories and by the Centre for Epidemiology and Risk Analysis (CERA).

3. Timeliness and punctuality

Any *Salmonella* reports that are confirmed or identified after the publication of this report will be incorporated into the revised tables that appear in the following year's publication. This may cause the number

of incidents and/or isolations to differ from that previously given for a particular year. The most recent version of the report should therefore be used when comparing incidents from year to year.

4. Accessibility and clarity

Salmonella (VLA) has a related metadata profile (see section B).

5. Comparability

Changes in the number of *Salmonella* isolations from poultry and pigs over time may reflect changes in the monitoring activity conducted by the livestock industry and not necessarily changes in incidence in *Salmonella* infection. Number of tests carried out by PBFHO authorised laboratories is collated by DEFRA and reported in a different way to the EU. *Salmonella* isolates resulting from investigations under the Zoonoses Action Plan (ZAP) scheme are reported to and collated by VLA.

According to the Poultry Breeding Flocks and Hatcheries Order (PBFHO) 2007, which replaced the PBFHO 1993 in 2007, an enhanced sampling (boot swabs or composite faeces) and detection by Semi-Solid Rappaport Vassiliadis culture medium method is used for *Salmonella* monitoring in chicken breeding flocks. This change may have an effect on the number of reports received since the implementation of the PBFHO 2007 and in comparison with previous years. In 2008 the PBFHO 2007 was in turn revoked and replaced by the Control of Salmonella in Poultry Order (CSPO) 2007, which included the requirements for the implementation of an NCP in commercial laying flocks (to start in February 2008). In the last months of 2007 the intensity of the voluntary monitoring of layer flocks for *Salmonella* changed according to new enhanced sampling protocols and sensitive detection methods in preparation for the new *Salmonella* National Control Programme in chicken layers. Also towards the end of 2007 the intensity of the sampling during advisory and investigation visits conducted by government veterinarians in order to assist the industry to identify if and where *Salmonella* infection was present on their holdings increased. This could have affected the number of reports received from laying hens over that period of time. It should be kept in mind that the poultry data reported in 2007 resulted from a different monitoring system compared with previous years, and it is not directly comparable with earlier data. The poultry data refer to *Salmonella* incidents and not *Salmonella* infected flocks, and it originated from samples collected from all parts of the poultry industry including back-yard flocks and pet chickens, and environmental samples not directly derived from flocks or their immediate surroundings.

From 1st January 2006, any hatchery isolates where there are no supply flock details available are treated as isolations only and not incidents as they cannot be traced back to a specific supply flock. The species that are mainly affected by this differential reporting from 2006 onwards are chickens and ducks.

Not all isolates of new incidents of *S. Typhimurium* from bovine animals received from the Scottish Agricultural College (SAC) are phage typed. As the system does not allocate an incident reference number to a report of *S. Typhimurium* until the phage type result is received, this means that some isolates of *S. Typhimurium* from SAC will not be allocated an incident reference and therefore the actual number of reports of *S. Typhimurium* may be higher than the number recorded on the database.

VLA Quality Assurance Statement

The policy of the Veterinary Laboratories Agency (VLA) is to maintain a high standard of quality in all aspects of its operation and to continually satisfy our customers in respect of all the services offered.

The laboratory facilities are UKAS accredited to BS EN ISO 17025:2000 (Lab Nos. 0941, 1769 and 2112) for an extensive range of tests supported by proficiency testing accredited to ISO/IEC Guide 43-1 1997 (Lab No. 0004). VLA is certificated to BS EN ISO 9001:2000 for 'the provision of a range of specialist veterinary scientific services to the Government and other interested parties worldwide (Certificate Nos. LRQ 4000436, 4001071, 0962413 and 4001392).

Additionally VLA holds Good Laboratory Practice and Good Manufacturing Practice approval and complies with the Joint Code of Practice for Research projects and Good Clinical Veterinary Practice quality standards.

VLA Weybridge is accredited to BS EN ISO 14001:2004 for environmental management systems.

SECTION B

METADATA ELEMENTS

Metadata elements	Definition
Creator	Salmonella Surveillance Team, CERA, VLA Weybridge, New Haw, Addlestone, Surrey KT15 3NB
Date created	02/04/2008 (data retrieval from FarmFile/Salmonella database) – non-poultry data and 16/06/2008 (data retrieval from FarmFile/Salmonella database) – poultry data
Identifier	Salmonella Annual Surveillance Report 2007, Version 1
Quality	See Section A
Publisher	Salmonella Surveillance team, CERA, VLA Weybridge, New Haw, Addlestone, Surrey, KT15 3NB
Source	Farmfile/Salmonella database.
Title	Salmonella in Livestock Production in GB 2007

ADDITIONAL REPORT METADATA ELEMENTS

Metadata elements	Definition
Coverage spatial	Salmonella reports made in Great Britain
Date. Issued	11/09/2008
Date. Updating frequency	Annually
Format medium	Word document
Language	English
Mandate authorising statute	Data collected under: Zoonoses Order 1989 PBFHO 2007 ABPR 2005 IPAPO 1981
Rights. copyright	Crown copyright
Subject. Category	Zoonoses, Animal Health
Subject. Keywords	Salmonella, Livestock
Subject. programme	Food and Environmental Safety
Subject. project	Surveillance of Salmonella in animals (FZ2000) Monitoring of Antimicrobial Resistance in Bacteria from Animals and their Environment (FZ2200)

	Microbiological monitoring of Animal By Products, laboratory inspection scheme and Quality Assurance sample supply (ABPR & PBFHO) (FZ2800)
Status	Approved by: Christina Papadopoulou (c.papadopoulou@vla.defra.gsi.gov.uk) Version 1
Type	Report

Acknowledgements

Incidents were reported by Nominated Officers of the Veterinary Laboratories Agency for England and Wales and Divisional Veterinary Managers for Scotland and, through them, by private laboratories.

Divisional Veterinary Managers of Animal Health (formerly State Veterinary Service) are responsible for the collection of samples of processed animal protein.

Staff of the Veterinary Laboratories Agency processed the data.

The following reference laboratories made or confirmed the majority of isolations:

- Veterinary Laboratories Agency, Weybridge and Lasswade.
- HPA Laboratory of Enteric Pathogens, Colindale.
- Scottish *Salmonella* Reference Laboratory, Glasgow.

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