



## Non-Statutory Zoonoses (Project FZ2100)



1/09

Quarterly Report

January – March 2009

Monitoring the field occurrence of appropriate animal diseases can highlight the potential for zoonotic transmission and provide a sentinel for human environmental and foodborne health risks. These reports, which primarily relate to farmed animal species, summarise the surveillance activities of the Veterinary Laboratories Agency (VLA) for predominantly non-statutory zoonoses and infections shared between man and animals in England and Wales using data gathered by the network of Regional Laboratories (RLs). Quantitative diagnostic data for all of Great Britain is provided by the Veterinary Investigation Diagnostic Analysis (VIDA) surveillance system, which includes information from the Scottish Agricultural College (SAC) Veterinary Services. Summaries of joint veterinary/medical investigations into incidents and outbreaks of non-statutory zoonotic disease and associated activities are also included. This report covers the three month period between January and March 2009. The Non-Statutory Zoonoses project (FZ2100) is funded by Defra through the VLA's Food and Environmental Safety programme and also uses returns from the Emerging Diseases and Welfare programme. Information concerning compulsorily notifiable or reportable zoonoses is recorded elsewhere under other projects such as FZ2000 (Salmonella).

### Highlights

Table of VIDA diagnoses of non-statutory zoonoses in Great Britain  
Zoonotic pathogens in sheep and goat abortions  
Summaries of VLA surveillance activities for non-statutory zoonoses  
Release of Guidelines for the Investigation of Zoonotic Disease (England and Wales)

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# 1. General scanning surveillance

## 1.1 Non-Statutory Zoonotic VIDA data for Great Britain: January – March 2009

This table (collated 01/05/09) summarises clinical diagnoses of non-statutory zoonoses and infections shared between animals and man from specimens submitted to VLA and SAC laboratories between January and March 2009 and compares the findings with the same quarter in 2008 and 2007. It includes rare zoonotic infections and those for which zoonotic potential is confined predominantly to immuno-compromised individuals. Diagnoses use strict criteria and are recorded (once only per incident) using the VIDA system. The list is subject to selection, submission and testing bias. It is not definitive and **excludes** notifiable or reportable diseases (notably salmonellosis, which is recorded elsewhere). It is intended as a general guide for veterinary and public health professionals to the diagnosed occurrence of animal-associated infections in predominantly farmed animal species.

Diagnosis	Q1 Total (all species)			Q1 Diagnoses in 2009						
	2007	2008	2009	Cattle	Sheep	Goats	Pigs	Birds <sup>1</sup>	Misc <sup>3</sup>	Wildlife <sup>2</sup>
Babesiasis	0	0	1	1						
<i>Brachyspira pilosicoli</i> / intestinal spirochaetosis	8	8	6				6	0		
Brucella in marine mammals	0	0	0						0	0
Campylobacter fetopathy	118	111	93	16	77	0			0	0
Chlamydiosis ( <i>C. psittaci</i> )	0	0	2					2		
<i>Chlamydomphila abortus</i> fetopathy	432	289	298	0	295	3			0	0
<i>Corynebacterium pseudotuberculosis</i> (CLA)	18	20	6		6	0				
Cryptosporidiosis	315	369	476	454	17	3	1	1	0	0
Cysticercosis	0	0	0		0					
Dermatophilus infection	8	3	3	0	2	0		0	1	
Erysipelas	12	9	14		3	0	7	4		
Fasciolosis	265	591	855	474	351	5			23	2
Hydatidosis	0	0	0		0					
Leptospirosis (all categories)	31	25	3	3	0	0	0		0	0
Listeriosis (all categories)	66	104	94	20	69	5	0	0	0	0
Louping ill	3	0	1	0	1			0		
Orf (parapox virus)	9	7	7		6	1				
<i>Pasteurella multocida</i> pneumonia/pasteurellosis	116	75	102	67	19	1	11	2	2	0
Pseudocowpox (parapox virus)	0	6	0	0						
Q Fever/ <i>Coxiella burnetii</i>	1	3	0	0	0	0			0	0
Red Mite ( <i>Dermanyssus galinae</i> )	2	1	0					0		
Ringworm	7	4	1	1	0	0	0	0	0	0
<i>Sarcoptes scabiei</i> infection	1	0	2	0		0	1		1	
Streptococcal infection (excl. bovine mastitis)	30	48	39		1	1	34	1	1	1
Swine influenza	4	5	2				2			
Toxoplasmosis	238	134	135		135	0			0	0
Tuberculosis (excl. <i>M. bovis</i> )	6	9	5			0	2	1	1	1
Yersiniosis (incl. fetopathy)	10	13	15		9	1		1	3	1

Shaded boxes indicate a diagnosis is not available or applicable for that species

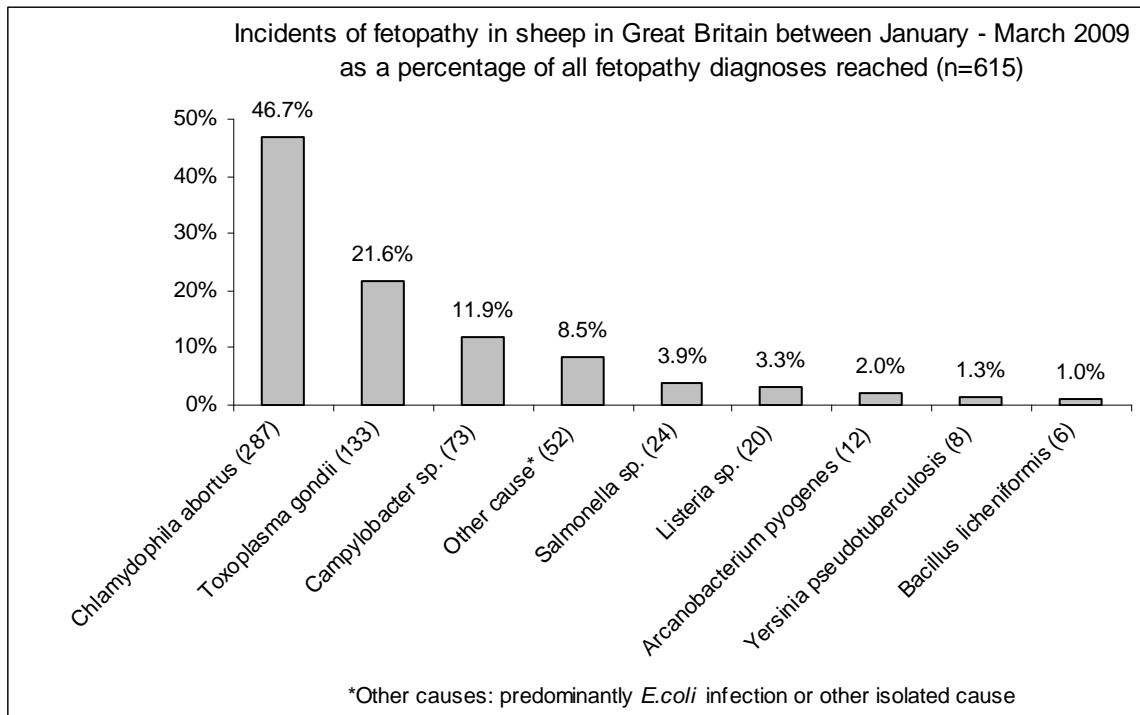
<sup>1</sup> Includes both domestic and wild birds    <sup>2</sup> Mammals only    <sup>3</sup> Miscellaneous exotic farmed species

### Comments

There was an increasing trend in the number of diagnoses of cryptosporidiosis, predominantly in calves. The marked increase in the number of diagnoses of fasciolosis (a very minor zoonosis) has been commented on in

previous reports and relates mainly to heavy summer and autumn rainfall and extension of endemic areas. Diagnoses of ovine fetopathy are shown in more detail in section 1.2. Reductions in some disease categories generally reflected a decline in submissions rather than a change in the proportion of diagnoses reached. Further information on scanning surveillance diagnoses and trends for endemic diseases is available: an A to Z of animal diseases is available at [http://www.defra.gov.uk/animalh/diseases/vetsurveillance/az\\_index.htm#v](http://www.defra.gov.uk/animalh/diseases/vetsurveillance/az_index.htm#v)

**1.2 Sheep and goat abortions January – March 2009:** In view of the large number of potentially zoonotic infections involved in abortions in these species, additional information from the first quarter of 2009 is shown separately below; comments on fetopathy incidents encountered by RLs in England and Wales are provided in Section 1.3.



### 1.3 Recent reports from Regional Laboratories

This section provides an up to date overview of the main diagnoses and observations concerning zoonotic non-statutory diseases and infections shared between man and animals based on submissions to the VLA (England and Wales only) during the period January to March 2009. It refers to incidents that may not all be included in 1.1 above (because of inherent delays in the recording system). Further information on significant incidents is provided in the reports by the VLA species groups and the monthly surveillance reports in the Veterinary Record derived from the VLA's Emerging Diseases and Welfare programme.

#### Cattle

*Listeria monocytogenes* was isolated in pure culture from the fetal stomach contents of an aborted dairy calf and from eye swabs from cattle with acute conjunctivitis. *Campylobacter fetus* was isolated from fetal stomach contents of an aborted seven-month gestation calf. Infection with *Yersinia enterocolitica* was confirmed as the cause of abortion of a dairy cow at seven months gestation. *Mannheimia haemolytica* was isolated from the lungs of a three-month old calf with pneumonia. *Pasteurella multocida* was isolated in pure culture from milk samples of two cows with recurrent mastitis. Culture of milk from a cow with chronic mastitis yielded a pure growth of *Streptococcus mutans*, an unusual mastitis pathogen more commonly associated with tooth decay in humans. Cultures from inflamed skin lesions in two dairy heifers yielded mixed bacterial growths including organisms identified as *Corynebacterium minutissimum*, which causes erythrasma in humans. High antibody

titres for **Leptospira Hardjo** were demonstrated in bulk milk and blood samples taken from a dairy herd experiencing a high number of abortions. **Cryptosporidiosis** was encountered as a cause of neonatal scour on numerous occasions. **Ringworm** lesions were present in a batch of ill-thriven calves. **Fasciolosis** continued to be commonly diagnosed in adult cattle.

## Sheep and goats

Abortions due to **Chlamydophila abortus**, **Toxoplasma gondii**, **Listeria monocytogenes**, **Listeria ivanovii**, **Campylobacter fetus**, **Campylobacter jejuni** and **Yersinia pseudotuberculosis** were variously encountered. A goat herd was visited as part of an on-going investigation into **Q fever** associated abortions. **Listeria encephalitis** was identified in a four-year-old ewe with head tilt, lethargy and unilateral paralysis before death. **Bacteroides ureolyticus** and **Streptococcus suis type 33** were recovered from the uterus of an 18-month-old dairy goat with mastitis and metritis. **Erysipelothrix rhusiopathiae** was isolated from joint fluid samples from a group of lambs with a history of lameness. **Corynebacterium pseudotuberculosis** was isolated from a superficial lymph node abscess in a ram. **Y. pseudotuberculosis** was cultured from samples taken from a mass in the parotid region of an adult goat. **Cryptosporidiosis** was diagnosed in a batch of one-week-old lambs with diarrhoea. Acute and chronic **fasciolosis** was diagnosed on many occasions. Electron microscopy confirmed **parapox (orf)** as the cause of skin lesions in a group of 4-week-old goat kids and in a ram with skin lesions on both ears.

## Pigs

Incidents involving nervous signs and sudden deaths due to infection with **S. suis type 2** were diagnosed frequently. **S. suis type 16** was diagnosed as the cause of joint ill progressing to septicaemia in three-week-old piglets. **Streptococcus dysgalactiae subsp. equisimilis** caused joint swelling in young pigs. Pleuropneumonia, due to **Pasteurella multocida**, led to the death of a 14-week-old pig. **Swine influenza H1N2**, in conjunction with **Pasteurella multocida** and **Streptococcus suis type 2**, was confirmed as the cause of coughing with high morbidity in a finisher unit. **E. rhusiopathiae** was the cause of lameness affecting newly weaned pigs. Septicaemic erysipelas infection was also confirmed as the cause of sudden death of a recently purchased replacement boar. **Brachyspira pilosicoli** infection was diagnosed as the cause of mild scour in 20% of a group of 220 eight-week old pigs.

## Birds

Infection with **Y. pseudotuberculosis** was diagnosed as the cause of death in a Gouldian Finch from a zoological collection. Poor productivity in a flock of 100 laying hens was attributed to **red mite** infestation. **Chlamydia psittaci** was considered to be the cause of diarrhoea in a Hyacinth Macaw following detection of **Chlamydophila** DNA using PCR. **Avian tuberculosis** was a contributory factor to weight-loss in a wild female Common Buzzard.

## Miscellaneous other species and wildlife

**Y. pseudotuberculosis** septicaemia was diagnosed as the cause of death of a four week old sitatunga (marshbuck) calf. This organism was also was cultured from abscesses in the mesentery and liver of a juvenile roe deer. **Y. enterocolitica** was isolated from faecal sample from a six-month-old waterbuck. **E. rhusiopathiae** was isolated from abscessated submandibular lymph nodes of a 17-month-old waterbuck which had died following a short period of malaise. Pruritus and crusting along the dorsum of an adult alpaca was attributed to infection with **dermatophilus**. **Liver fluke (Fasciola hepatica)** was diagnosed commonly as the cause of weight loss and deaths in alpacas, and as the cause of very poor condition of a wild young roe deer. **Sarcoptes** mites were demonstrated in areas of pruritic dermatitis of an adult alpaca. **Mycoplasma phocicerebrale**, which causes "seal finger", was identified in a wound swab from an immature grey seal. Electron microscopy identified **orthopox virus** in skin lesions in a juvenile harbour porpoise, the virus is currently undergoing further DNA sequencing.

## 2. Specific scanning and targeted surveillance and related studies

### 2.1 Campylobacter

A total of 170 isolates from bovine (n=37) and ovine (n=133) submissions (predominantly abortion cases) were examined further (at VLA Winchester) during the period January-March 2009. This was an increase compared to the same period in 2008 (n=131). In 2009, 9 (24%) bovine and 53 (40%) ovine isolates were thermophilic campylobacters (*C. jejuni*, *C. coli*, *C. hyointestinalis*, *C. sputorum* and *C. mucoralis*), increasing from 19% in bovines and 26% in ovines from the same period last year.

### 2.2 Leptospirosis

Targeted surveillance for leptospirosis is variously achieved by analysis of results from: (1) RT-PCR for pathogenic leptospires on appropriate diagnostic samples combined with sequencing and denaturing high pressure liquid chromatography (DHPLC), (2) Microscopic agglutination test (MAT) antibody testing on sera submitted for disease diagnosis, monitoring and export (mainly dogs). Diagnostic MAT titres are considered seropositive at 1/100 or above (1/50 for *L. Hardjo bovis* in cattle) (3) Bulk milk tank antibody testing (by ELISA) of samples submitted from dairy herds for monitoring purposes. 2 and 3 are influenced by vaccination (dogs and cattle); MAT results are also very dependent on the range of serology (pools or single serovars) undertaken.

(1) A total of 197 specimens (mainly cattle and pig fetal kidneys) were examined by RT-PCR for pathogenic leptospires during the quarter. None of the 152 samples, which were suitable for testing, were positive.

2) 3986 serum samples from a range of species were examined between January and March 2009. Of 1007 canine sera, 41.7% and 12.1% were positive to *L. Canicola* and *L. Icterohaemorrhagiae* respectively, compared to 39.4% and 10.1% for the same quarter last year. Of 1432 bovine samples examined for *L. Hardjo bovis*, 19.4% were positive (28.3% in 2008). Of 102 porcine samples tested for *L. Bratislava*, 5.8% were positive (18.0% in 2008). Other significant serovars noted included 10 dogs positive to *L. Bratislava*, 25 positive to *L. Copenhageni* and one horse and one dog was positive to *L. Pomona*, although this was likely to be a cross reaction.

3) Bulk milk antibody tests for *L. Hardjo* showed a small change compared to the previous year. During the period January-March 2009, 61 (20.7%) of 295 tests undertaken for monitoring purposes were negative, 46 (15.6%) were low positive, 42 (14.2%) were mid positive and 146 (49.5%) were high positive. In 2008, comparable figures for the same quarter (499 tests) were 30.3% negative, 12.6% low-positive, 13.6% mid-positive and 43.5% high-positive. Although fewer samples were submitted this quarter, the proportion of serologically positive herds has increased with serological evidence of potentially active infection in just over 60% of the dairy herds submitting samples. The significance of these observations is heavily influenced by vaccination status and selection bias although it is thought unlikely that fully vaccinated herds contributed many samples.

### 2.3 Mycobacteria (excluding *M. bovis*)

Since *Mycobacterium bovis* became notifiable in all species in 2006, the number of samples examined by VLA Weybridge has increased, particularly from pets and camelids; samples from pigs are mainly submitted by meat inspectors. A summary of potentially zoonotic non-statutory mycobacteria identified during the first six months of 2009 will be reported in the next (Q2) report.

## 2.4 Streptococcus suis

*Streptococcus suis* isolates from diagnostic material submitted to RLs are typed further for disease surveillance purposes at VLA Bury St Edmunds. The numbers and serotypes from porcine diagnostic material submitted to RLs during January-March 2009 are shown below, with data for previous years for comparison.

Year	1	2	3	4	7	8	9	10	12	14	15	16	22	25	31	33	1/2	UT	Totals
2006	2	18	3	3	1					1							2		30
2007	3	16	7	1							1				1		2	4	35
2008	3	16	2		3	2	1					2					1	6	36
2009	3	16	1	1	1	1	2					1				1		5	32

*Streptococcus suis* type 2 again predominated.

## 2.5 Toxoplasmosis

The European Food Safety Authority (EFSA) has highlighted the significance of toxoplasmosis as a foodborne zoonosis and the need to improve surveillance in this field. Serological examinations for *Toxoplasma gondii* using the latex agglutination test (LAT) are undertaken by the VLA on sera submitted to RLs by veterinary practitioners for diagnostic, monitoring and screening purposes. A summary of these findings for the period January to March 2009 (which do *not* constitute a structured survey), is given below. Positive samples, as defined here, have LAT titres of 1/64 or greater and indicate a history of exposure to this protozoan parasite.

In sheep in the first quarter of 2009, 46 (42%) of 356 sera tested (from 98 separate submissions) were positive for *T. gondii*; compared with 43 (43%) of 99 serum samples (from 38 separate submissions) during the same period in 2008. Two (33%) of 6 goat sera received (from 3 separate submissions) tested positive for *T. gondii*. The 2 pig sera received both tested negative.

## 2.6 Trichinella spiralis

From January 2006 enhanced testing for *Trichinella spiralis* (by the EU approved pepsin digest method specified in Commission Regulation SANCO 2537/2005) was extended to the domestic slaughter of all boars, sows and farmed wild boar. Testing of samples from small abattoirs was undertaken by VLA Langford, Thirsk and Bury St Edmunds under contract to the Meat Hygiene Service. VLA Weybridge also undertakes testing of samples submitted from feral wild boar and is collaborating with the Central Science Laboratory, York, in surveying foxes.

Between January and March 2009, a total of 2561 individual samples (from 815 submissions) were received by VLA for testing in pools, each consisting of up to three different submissions. There were 99 equine submissions, 633 from boars/sows, 83 from wild boar. In addition, 12 feral wild boar samples were tested at Weybridge. All tests gave negative results.

## 3. Investigations into zoonotic and potentially zoonotic incidents

During 2008, the VLA worked closely with the HPA and other agencies in the production of guidelines for the surveillance and joint investigation of zoonotic diseases in England and Wales. These guidelines are now in operation and can be found at: [http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1240530336599](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1240530336599).

VLA collaborations with the HPA in the investigation of zoonotic incidents are also included in HPA Zoonoses newsletters:

<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1234254474768?p=1234254474768>

### 3.1 Cryptosporidiosis

Investigations to assist in human outbreaks of cryptosporidiosis linked to direct contact with animals are undertaken at the request of Consultants in Communicable Disease Control (CsCDC) of HPA/NPHS and in collaboration with the National Cryptosporidium Reference Unit, Swansea and follow jointly agreed guidelines.

No requests for joint investigations were received this quarter.

### 3.2 VTEC O157

VTEC O157 outbreak investigations are undertaken according to agreed guidelines at the request of CsCDC of HPA/NPHS where an animal-associated source is suspected, and variously involve collaboration with other organisations, including the Environmental Health departments of Local Authorities and the Health and Safety Executive. Determination of phage type (PT), Vero cytotoxin (VT) type and comparison of human and animal isolates by pulsed field gel electrophoresis (PFGE) and variable number of tandem repeat (VNTR) analysis are performed by the *E. coli*/Shigella/Yersinia/Vibrio Reference Unit of the Laboratory of Gastrointestinal Pathogens, HPA Centre for Infections, Colindale. If isolates from animals circumstantially implicated in outbreaks have the same PT and indistinguishable PFGE profiles from human cases, this is taken as confirmatory evidence of a causal association. In practice, there can be minor PFGE profile variation amongst some isolates associated with an outbreak investigation. VNTR profiles of strains within an outbreak can also show variation at a single tandem repeat locus; application of this method is currently under development. Other VTEC O157 PTs may be detected incidentally during the investigation of animal premises.

No requests for investigations were received this quarter.