



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). Diagnostic data for Great Britain is provided by the VIDA surveillance system, including 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 2008. 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 notifiable or compulsorily reportable zoonoses is recorded elsewhere under other projects such as FZ2000 (Salmonella).

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1. General scanning surveillance

1.1 Non-statutory zoonotic VIDA data for Great Britain: January – March 2008

This table (collated 12/5/2008) summarises clinical diagnoses from specimens submitted to VLA and SAC laboratories between January and March 2008 (Q1) and compares the findings with the same quarters in 2007 and 2006. It includes rare zoonotic infections and those for which zoonotic potential is confined predominantly to immunocompromised individuals. Diagnoses use strict criteria and are recorded (once only per incident) using the Veterinary Investigation Diagnostic Analysis (VIDA) system. The list is subject to selection, submission and testing bias. It is not definitive and excludes notifiable or reportable diseases. It is intended only as a general guide for veterinary and public health professionals to the diagnosed occurrence of animal-associated infections in predominantly farmed animal species. This revised format, including SAC data, was first introduced in 2008.

Diagnosis	Q1 Total (all species)			Q1 Diagnoses in 2008						
	2006	2007	2008	Cattle	Sheep	Goats	Pigs	Birds ¹	Misc	Wildlife ²
Babesiosis	0	0	0	0						
Brucella in marine mammals	0	0	0						0	0
Campylobacter fetopathy	108	188	108	15	92	1			0	0
Chlamydiosis (<i>C. psittaci</i>)	0	0	0					0		
<i>Chlamydomphila abortus</i> fetopathy	396	435	274	0	269	5			0	0
<i>Coryne. pseudotuberculosis</i> (CLA)	12	18	18		16	2				
Cryptosporidiosis	437	421	356	339	13	3	0	0	1	0
Cysticercosis	0	0	0		0					
Dermatophilus infection	0	8	3	2	1	0		0	0	
Erysipelas	9	12	8		3		1	4		
Fasciolosis	361	277	577	344	219	3			11	0
Hydatidosis	0	0	0		0					
Leptospirosis (all categories)	9	31	26	26	0	0	0		0	0
Listeriosis (all categories)	125	66	94	25	65	4	0	0	0	0
Louping ill	2	3	0	0	0			0		
Orf (parapox virus)	8	9	6		6	0				
<i>Pasteurella multocida</i> pneumonia/pasteurellosis	134	125	29	40	3	0	12	1	0	0
Pseudocowpox (parapox virus)	0	0	1	1						
Q Fever/ <i>Coxiella burnetii</i>	2	1	1	0	1	0			0	0
Red Mite (<i>Dermanyssus galinae</i>)	0	2	1					1		
Ringworm	11	7	3	1	2	0	0	0	0	0
<i>Sarcoptes scabiei</i> infection	1	1	0	0		0	0			
Streptococcal infection (excluding bovine mastitis)	34	32	40		5	0	31		3	1
Swine influenza	5	5	4				4			
Toxoplasmosis (incl. fetopathy)	251	279	75		75	0			0	0
Tuberculosis (excl. <i>M. bovis</i>)	18	6	7			0	0	4	1	2
Yersiniosis (incl. fetopathy)	13	10	12		6	3		2	0	1

NR – Not recorded Shaded boxes indicate a diagnosis is not available for that species

¹ Includes both domestic and wild birds ² Mammals only

Comments

There was a large increase in the number of diagnoses of fasciolosis. Reductions in the number of cases in some disease categories mainly reflected an overall decline in the number of submissions to diagnostic laboratories rather than a change in the proportion of diagnoses reached, although there may also be some short-term anomalies associated with the recent inclusion of data from Scotland. More detailed information on scanning surveillance diagnoses and trends for endemic diseases is available from the Emerging Diseases and Welfare programme http://www.defra.gov.uk/vla/reports/rep_surv.htm

1.2 Recent reports from Regional Laboratories

This section summarises the main diagnoses and observations concerning zoonotic non-statutory diseases and infections shared between man and animals from submissions to Regional Laboratories (RLs) of the VLA during the period January to March 2008. It includes incidents that are not necessarily recorded in the VIDA table above and hence there may be some apparent discrepancies. Further information is provided in the reports by the VLA species groups http://www.defra.gov.uk/vla/reports/rep_surv.htm and the monthly surveillance reports in the Veterinary Record derived from the Emerging Diseases and Welfare programme.

Cattle

Cryptosporidiosis was diagnosed as a cause of diarrhoea in calves on several occasions, often in association with other enteric pathogens. *Listeria monocytogenes* was identified as a cause of abortion as well as being implicated in sporadic cases of neurological disease in adult cattle. *Chlamydophila abortus* was detected by PCR in tissues from an aborted calf; *Chlamydophila* sp were also detected in conjunctival swabs from a group of dairy heifers with severe conjunctivitis. *Coxiella burnetii* was identified in an aborted fetus. Abortions due to *Leptospira hardjo*, and high titres consistent with recent infection, were seen in one herd. *Campylobacter fetus fetus* was isolated from a near full term aborted fetus. *Yersinia pseudotuberculosis* was isolated in pure growth from fetal stomach contents of an aborted calf. *Pasteurella multocida* was isolated from the lungs of a calf submitted with respiratory disease, wasting and diarrhoea. *Echinococcus granulosus* (hydatid) cysts were identified in lung and liver tissue from adult dairy cows slaughtered after a positive tuberculin test; a subsequent farm visit identified foxes as a possible source of infection.

Sheep and goats

Chlamydophila, *toxoplasma*, *listeria* and *campylobacter* were all identified as causes of abortion. Abortion due to *Yersinia enterocolitica* was diagnosed in one of eight ewes that had aborted or produced weak lambs. *Coxiella burnetii* was detected in placenta from an aborted ewe which was also strongly seropositive for Q fever. *Listeria monocytogenes* was isolated from the brain stem of a 10-month-old lamb; listerial meningoencephalitis was also confirmed in a milking goat following histological examination of brain tissue. Cryptosporidiosis was the apparent cause of death of approximately 200 goat kids over a 10 day period. *Corynebacterium pseudotuberculosis* was isolated from the brain of a ram exhibiting neurological dysfunction prior to death. *Yersinia pseudotuberculosis* was isolated from tissues lymph nodes and faeces of two dairy goats. *Trichophyton verrucosum* and *Dermatophilus congolensis* ringworm was identified in a flock of sheep chronic skin problems.

Pigs

Streptococcus suis (mainly type 2) septicaemia, meningitis and arthritis was identified on several occasions. In one incident, *S. suis* type 2 was the cause of nervous signs and lameness in 50 of 200 weaners, of which 36 had died. *S. suis* type 3 was cultured from the brain of a pet pig with pneumonia and meningitis. Septicaemia caused by an untypable *S. suis* was diagnosed as the cause of death of a ten-day-old piglet from a smallholding where the majority of littermates had also died. *Erysipelothrix rhusopathiae* was cultured from vegetative endocarditis lesions of a growing pig that died suddenly. Swine influenza was suspected by serology as the cause of coughing in sows which spread to the younger pigs.

Birds

Fowl cholera (*Pasteurella multocida*) caused increased mortality on a hen barn layer unit. Listerial encephalitis was suspected as the cause of in-coordination and torticollis in an exotic breed of chicken. Two pet chickens which suffered dramatic weight loss were diagnosed with avian tuberculosis; this was also suspected in a mute swan and a Ring Teal duck, both of which had multiple nodules in various organs.

Miscellaneous other species and wildlife

Yersinia pseudotuberculosis was isolated from the spleen of an adult Mara from a wildlife park. It is noted that Mara are particularly susceptible to *Yersinia* infections and it is said to be endemic in some Mara populations in zoos. Louping ill was suspected as the cause of nervous signs and abortion in a three-year-old Shetland pony. *Streptococcus equi* subsp. *zooepidemicus* was isolated from a five-month old foal with nasal discharge and pyrexia, the infection spread rapidly through the stables. *E. coli* 04:K+ with cytotoxic necrotising factor (CNF) was isolated from a septicaemic badger carcase.

2. Specific scanning and targeted surveillance and other studies

2.1 Campylobacter

The Food and Environmental Safety Department at VLA Weybridge is responsible for the confirmation and speciation of campylobacters and other related potentially zoonotic organisms submitted via various routes, including VLA Regional Laboratories and private laboratories. The findings for January to March 2008 are summarised below.

A total of 131 isolates from bovine (n=26) and ovine (n=105) abortion cases were investigated this quarter representing a decrease compared with the same quarter in previous years (205 in 2007, 133 in 2006). In 2008, 5 (19%) bovine and 27 (26%) ovine isolates were thermophilic campylobacters (*C. jejuni*, *C. coli* and *C. hyointestinalis*), increasing from 5% in bovines and 11% in ovines from the same period last year.

In January 2008 work began on an EU national baseline study for the prevalence of *Campylobacter* spp. in broiler caeca and carcase samples (Salmonella and Campylobacter survey).

2.2 Cryptosporidium

Survey of Cryptosporidium in calves

Following successful surveys in lambs (2006) and pigs (2007), a further 12 month geographically structured survey commenced in January 2008 to assess the potential zoonotic hazard and environmental burden of *Cryptosporidium* spp. from calves. Faecal samples from calves under three months of age submitted for routine diagnostic post-mortem investigations from farms in England and Wales are being examined for *Cryptosporidium* spp. oocysts using the sensitive fluorescent antibody test; representative isolates will be identified and genotyped. Additional husbandry data is being collected for analysis. A total of 73 faecal samples from calves were examined this quarter, of which 42 (57.5%) were positive for *Cryptosporidium* oocysts. Full evaluation of the results will be undertaken at the end of the study.

2.3 E. coli Surveillance

A survey to enhance surveillance of *E. coli* from diagnostic submissions to RLs was introduced in 2005 to detect new and emerging strains of potential zoonotic importance and those associated with disease in animals. It utilises standardised case definitions, colony selection criteria and extended serotyping plus Verocell assay, multiplex PCR and Real Time PCRs to determine the following virulence factors: verocytotoxins, eae (intimin), cytotoxic necrotising factor (CNF), cytolethal distending toxin (CLDT), heat-stable toxin (Sta), heat-labile toxin (LT), and fimbrial adhesions. Findings are entered onto a dedicated database (Ecotest) to facilitate surveillance and monitor trends over time. Antimicrobial sensitivity testing of the isolates to detect extended-spectrum beta-lactamase (ESBL) enzymes is included under Project FZ2200.

A summary of the findings will be provided in the FZ2100 annual report.

2.4 Hepatitis E

VLA is participating in a VITAL 3 year FP7 project (led by the Central Science Laboratory) involving 15 laboratories from Europe (including Eastern Europe), which aims to sample various points in the production chain of pork, soft fruit and salad vegetables from farm to retail outlet. VLA will use standardised methods to sample pig farms, slaughterhouses, processing plants and retail butchers, including hands and surfaces. Examinations for HEV will be performed by quantitative RT-PCR. The results of all partners will be combined and attempts made to establish codes of practice to minimise transmission of HEV. Excretion levels on pig farms will also be examined. VLA/Defra Seedcorn and Med Vet Net funding is being used to establish a system for in-vitro propagation of HEV to determine environmental stability.

2.5 Leptospirosis

Targeted surveillance for leptospirosis is achieved by analysis of results from: (1) RT-PCR for pathogenic leptospire on appropriate diagnostic samples and sequencing and denaturing high pressure liquid chromatography (DHPLC) to further classify positives; (2) Antibody testing by microscopic agglutination test (MAT) 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. Hardjobovis* in cattle) and (3) Bulk milk tank antibody testing (by ELISA) of samples submitted from dairy herds for monitoring purposes. The latter two methods are influenced by vaccination (dogs and cattle); MAT results are also very dependent on the range of serology (pools or single serovars) undertaken.

(1) 218 specimens (mainly fetal kidneys) from a range of species (mainly cattle and pigs) were examined by RT-PCR for pathogenic leptospire during the quarter. Three (2%) of the 152 samples which were suitable for testing, were positive – all from bovine fetal kidney. The three cattle positives (probably *L. hardjo*) represented 2.6% of the 116 bovine samples tested compared to 1.5% of the 135 samples tested in the first quarter of 2007 and none of the 208 samples tested in 2006. Although this was a marginal increase, the overall incidence of confirmed leptospiral abortion in bovines remains low. None of the 25 porcine samples which were suitable for testing were positive.

(2) 4270 serum samples from a range of species were examined during the first quarter of 2008. Of 1409 canine sera, 39.4% and 10.1% were positive to *L. Canicola* and *L. Icterohaemorrhagiae* respectively, compared to 42.4% and 3.9% for the same quarter last year. Of 1742 bovine samples examined for *L. Hardjo bovis*, 28.3% were positive (26.2% in 2007); 18.0% of 122 porcine samples tested for *L. Bratislava* were positive (21.5% in 2007). Other significant serovars included 10 dogs positive to *L. Bratislava*, 4 positive to *L. Zanoni*, 1 positive to *L. Pomona* and 33 positive to *L. Copenhageni* and 2 horses positive to *L. Icterohaemorrhagiae*.

3) Bulk milk antibody test results remained fairly constant suggesting a stable field situation. During the period January-March 2008, 151 (30.3%) of 499 tests undertaken were negative, 63 (12.6%) were low-positive, 68 (13.6%) were mid-positive and 217 (43.5%) were high-positive. In 2007, comparable figures for the same quarter (526 tests) were 32.5% negative, 13.5% low-positive, 10.7% mid-positive and 43.3% high-positive. These findings indicate serological evidence of potentially active infection in about 50-60% of dairy herds from the population submitting samples, although the significance of these observations is heavily influenced by vaccination status.

2.6 *Streptococcus suis*

The numbers and serotypes of *Streptococcus suis* isolates from porcine diagnostic material examined by RLs between January and March are shown below. Data for 2006 and 2007 are shown for comparison.

Year	1	2	3	4	7	8	9	10	12	14	15	16	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

Streptococcus suis type 2 again predominated.

2.7 Toxoplasmosis

A recent comprehensive report by the European Food Safety Authority (EFSA Journal 2007, 583,1-64) 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 VLA on sera submitted to RLs. The findings presented below provide a summary of the serological status of samples submitted for diagnosis, monitoring and screening purposes but do not constitute a structured survey. 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 2008, 43 (43%) of 99 sera tested (from 38 separate submissions) were positive for *T. gondii*. Two goat sera were received, both tested negative for *T. gondii*. No samples were examined from other species.

2.8 *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 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 and the results are summarised below. VLA Weybridge is also collaborating with the Central Science Laboratory, York, in surveying foxes.

Between January and March 2008, a total of 2617 individual samples (from 831 submissions) were received by VLA for testing in pools each consisting of up to three different submissions. There were 67 equine submissions, 651 from boars/sows, 112 from wild boar and 1 Other. All tests gave negative results

3. Investigations into zoonotic and potentially zoonotic incidents

3.1 Cryptosporidiosis

Investigations to assist in human outbreaks of cryptosporidiosis linked to direct contact with animals are undertaken (under a MoU) 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 during this quarter.

3.2 VTEC O157

VTEC O157 outbreak investigations are undertaken at the request of CsCDC of HPA/NPHS (under a MoU) and variously involve collaboration with other organisations, including the Environmental Health departments of Local Authorities and the Health and Safety Executive. They are undertaken according to formal VLA guidelines. Determination of phage type (PT), Vero cytotoxin (VT) type and comparison of human and animal isolates by pulsed field gel electrophoresis (PFGE) are performed by the *E. coli*/Shigella/Yersinia/Vibrio Reference Unit of the Laboratory of Enteric Pathogens, HPA Centre for Infections, Colindale.

No requests for investigations were received this quarter.

3.3 *Corynebacterium ulcerans*

In March 2008, VLA Preston assisted the HPA with the investigation of possible zoonotic transmission of a toxigenic strain of *C. ulcerans* which was isolated from the throat of a patient with an erythematous pruritic rash and mild sore throat. The patient, who had received childhood vaccination for diphtheria, made a full recovery without hospitalization. Known risk factors for *C. ulcerans* infection include contact with farm and companion animals and ingestion of unpasteurized milk. *C. ulcerans* was not isolated from a throat swab taken from the owner's dog. Public health and hygiene advice was provided.

3.4 *Mycobacterium kansasii*

Unclassified mycobacteria and *Mycobacterium kansasii* (which is a common opportunistic mycobacterial pathogen in immunocompromised people), were isolated from several TB reactor calves in a dairy herd with a history of *M. bovis* infection and some inconclusive reactors. Investigations are underway to determine the source of infection. Water is considered to be a likely source. Risks to public health are minimal and the farm has received appropriate advice.