

GB surveillance cattle diseases

Quarterly Report: **SECOND QUARTER, 2008**

Date: 1st April – 30th June – 2008



The VIDA diagnoses are recorded on the VLA FarmFile database and SAC LIMS database and comply with agreed diagnostic criteria against which regular validations and audits are undertaken.

The investigational expertise and comprehensive diagnostic laboratory facilities of both VLA and SAC are widely acknowledged, and unusual disease problems tend to be referred to either. However recognised conditions where there is either no diagnostic test, or a clinical diagnosis offers sufficient specificity to negate the need for laboratory investigation, are unlikely to be represented. The report may therefore be biased in favour of unusual incidents or those diseases that require laboratory investigation for confirmation.

VLA RLs have UKAS Accreditation and comply with ISO 17025 standard. SAC Veterinary Services have UKAS accreditation at their central diagnostic laboratory and at their Edinburgh and St Boswells Disease Surveillance Centres which comply with ISO 17025 standard.

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Highlights

Congenital hydrancephaly due to *in utero* infection with Bluetongue serotype 8 was diagnosed, in southern England, for the first time in GB.

There was a large increase in bovine diagnostic submissions to both the VLA and SAC this quarter. The increase was seen in both samples and carcasses for necropsy from both adult and young beef and dairy cattle from all regions. This may be associated with increased value of cattle and their products.

There was a large increase in several metabolic diseases diagnosed in the quarter compared to the same period in 2007. This was probably due to poor quality forage following the adverse conditions for silage making in the summer of 2007.

Analysis of diagnostic submissions that did not yield a diagnosis showed no increases over the equivalent period of 2007, indicating low likelihood of the incursion of a new, unknown disease.

Salmonellosis due to Dublin and Typhimurium continues to decline but that caused by other serotypes remains unchanged.

INTRODUCTION

The aims of this report, and the means by which it is produced, are available at:

http://www.defra.gov.uk/vla/reports/docs/rep_survrep_qtlyc_intro.pdf

OVERVIEW

Factors influencing disease and submission rates

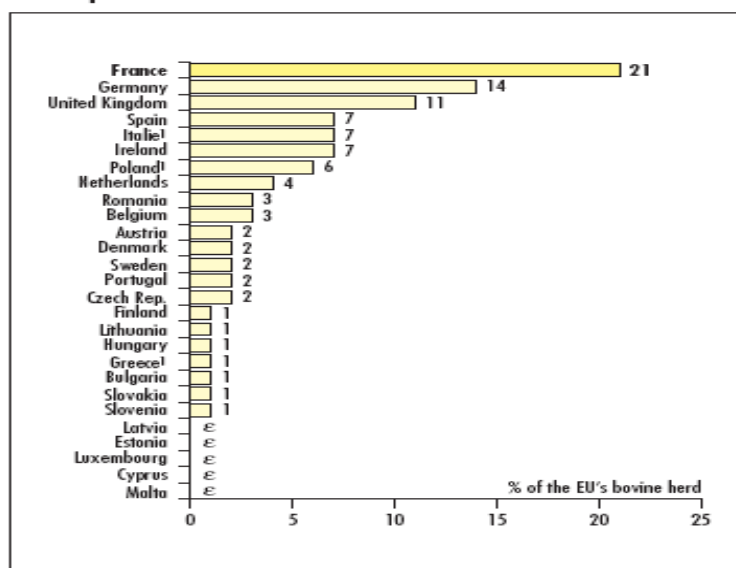
Many factors combine to influence the patterns of disease in cattle, and the ability to detect changes to these patterns through scanning and active surveillance. They include:

Cattle Demographics

The UK cattle population is the third largest of any EU country (see figure 1). Cattle in GB constitute a single epidemiological unit for most diseases. In this quarter, approximately 8.4 million animals were present on 77,000 premises in GB compared to 8.5 million cattle on 79,000 premises in the same quarter in 2007 (source, RADAR, DEFRA). A total of 61% of the cattle were registered beef breeds, 37% dairy cattle and the remaining 2% registered as other cattle. The 1% drop in number of cattle from April 2007 to April 2008 was equally distributed between beef and dairy cattle. Figure 2 shows the geographical distribution of cattle and the location of the diagnostic laboratories (present in all areas of GB with a large cattle population) that contribute data to this report.

Figure 1

Percentage of each country in the European Union's bovine herd



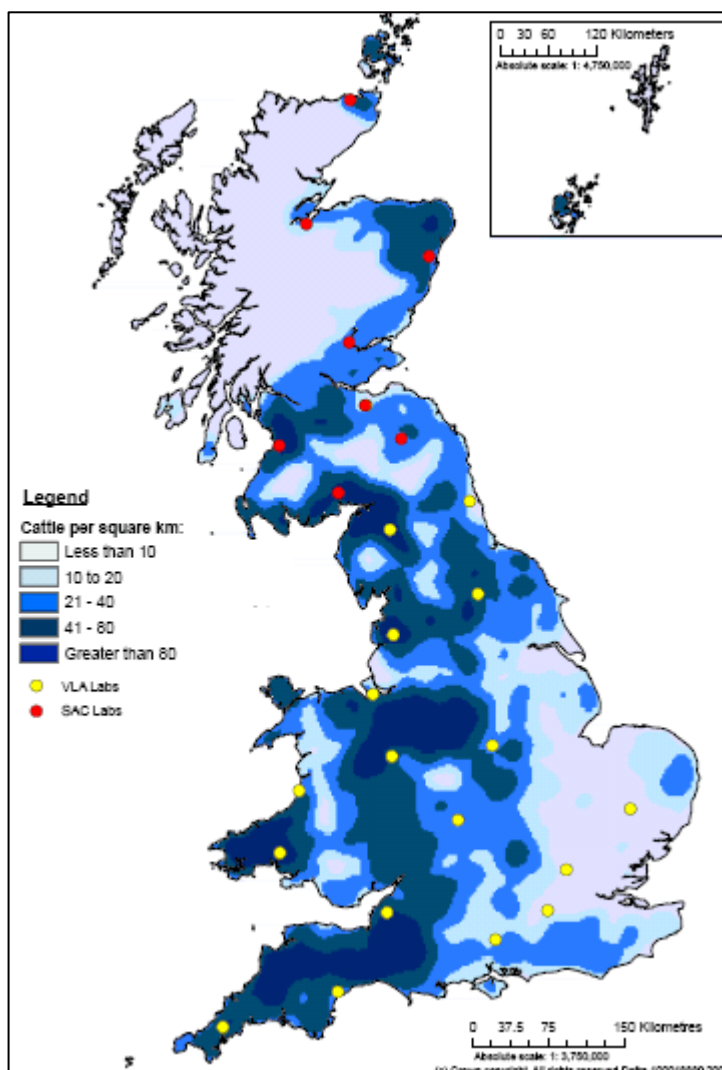
Source: Eurostat 2006

Weather

In April and June, temperatures were close to average across the whole of GB but in May, which was the warmest for the UK since 1914, they were generally 2 to 3°C above average (but only 1 to 2°C above the monthly average across eastern parts of Scotland and NE England).

Rainfall was slightly above (about 120%) average in April, but more so in parts of eastern Scotland and north-east England (140%). In May, rainfall was well above average across southern areas of England and Wales (145%), but below average across central and northern areas of GB (e.g. 34% of average in Scotland). By contrast, in June rainfall was generally close to or above average across much of the UK, but below average across some southern and central areas of England.

Figure 2
Distribution of Cattle and location of Diagnostic Centres in Great Britain (2007)



Economics of the cattle industries

In general when profit margins of the industries are acceptable there is a greater tendency to use disease diagnosis in the health management of the individual herd. The effectiveness of the surveillance carried out by the SAC and VLA is directly related to the financial health of the industry.

Dairy sector

The milk price has dropped slightly in the second quarter of 2008, but farm gate average prices are still around 24.5 pence per litre, which is approximately 7 pence per litre up from this period in 2007. The recent slight drop is due to seasonal variations and milk price rises are again expected in the autumn. Prices for feed wheat have decreased compared to the previous quarter, and are now around £140-£150 per tonne. On the other hand, protein prices have soared; soya trades at around £300/tonne and rape seed meal is even more expensive at £330/tonne. Fuel and fertiliser costs have continued to rise, eroding much of the profit margin on dairy farms.

Prices for dairy cows remain high at an average of £1,300 for freshly calved cows and £1,500 for heifers. Demand for dairy cows and heifers remains high. This value maintains a higher throughput of clinical material for veterinary practitioners and associated disease surveillance material.

Beef sector

The value of finished cattle continued to increase - it remained close to 210 pence per kg deadweight throughout 2007 but has increased steadily 280 pence in 2008. Despite this increased income, the cost of production is still a concern of beef farmers, who are under continued pressure to reduce the costs of inputs.

Export of live calves has been threatened by a, self imposed, ban on import of calves by some Dutch farmers. This is because of presence of bovine TB reactor calves in a recently imported batch of calves from the UK.

Another concern for UK beef farmers is the EU plan to reduce beef import tariffs by 70% at the World Trade Organisation negotiations. It could mean that excess production from other parts of the world is imported into the EU, which traditionally has a higher price for beef products compared to non EU suppliers.

Submission numbers

Previously, Cattle Quarterly Disease Surveillance Reports have included the total number of bovine submissions to the VLA and SAC. For surveillance purposes, submissions are categorised by the VLA and SAC according to their type and aim. Only those categorised as “diagnostic” are from cattle with clinical signs of disease for which the attending veterinarian is attempting to make a diagnosis. (Other categories include monitoring, sampling for special projects, suspected notifiable disease etc.). In this report and in future, the number of “diagnostic” submissions will be given as these better reflect true scanning surveillance effort. Therefore, historical submission numbers will not be compatible with those published in previous reports.

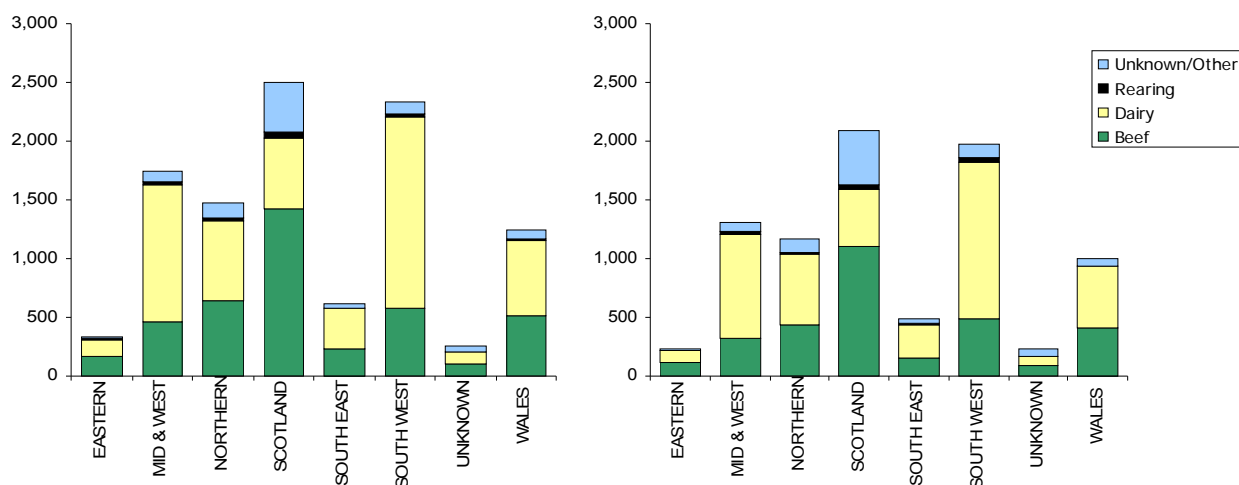
In the second (April-June) quarter of 2008, there were 10,503 bovine diagnostic submissions and 1,058 carcasses for necropsy (Table 1). This is a large increase on the numbers received in the second quarter of 2007, but only slightly more than that in previous second quarters, indicating that the main change was the abnormally low number received in 2007. This was probably due to poor economic returns from cattle farming in much of 2007.

Table 1
Bovine Diagnostic Submissions in England and Wales and Scotland

Second Quarter	Diagnostic Submissions			Number of Carcasses		
	E&W	Scotland	Total	E&W	Scotland	Total
2008	7,810	2,693	10,503	741	317	1,058
2007	6,241	2,249	8,490	496	285	781
2006	7,078	2,792	9,870	603	380	983
2005	7,360	2,742	10,102	560	344	904
2004	7,392	2,606	9,998	615	332	947

The increase in submissions has been from both dairy and beef cattle and has occurred across GB, as can be seen in figure 2.

Figure 3
Bovine diagnostic submissions to the VLA and SAC, Q2: 2008 (left) and 2007 (right)



Suspected Notifiable Disease

VLA Carmarthen notified Animal Health of suspect Enzootic Bovine Leucosis virus (EBL) in a seven year old dairy cow, subsequent blood sample demonstrated the cow to be negative. (The tumour was subsequently identified as a dermal lymphosarcoma.)

VLA Carmarthen also notified multiple skin tumours in a suckler cow to Animal Health but no further investigation was done when histological examination showed these to be of mast cell type, and not lymphoid (p.12).

Brucella surveillance

VLA Regional Laboratory abortion sample submissions (England & Wales).

	Statutory (BS7) submissions	Non-statutory submissions
Number of submissions from aborted cows tested for brucellosis (by culture, serology or both) by the VLA, April-June, 2008.	892	520

A single suspicious isolate was referred to the *Brucella* unit at VLA Weybridge for further investigation and was confirmed as *Brucella* negative.

In Scotland this quarter, SAC examined 327 statutory BS7 submissions and 261 aborted bovine foetuses for brucellosis. None were positive.

Bulk milk antibody tests

A total of 40,744 bulk milk antibody tests were done. No suspect positive milk samples were submitted to VLA Weybridge for further testing.

Continued vigilance is required: two *Brucella abortus* abortion incidents were reported in Northern Ireland during the first quarter of 2008 (Northern Ireland Surveillance Report, *Veterinary Record* (2008) **163**, 135-138).

Investigatory and Advisory Farm Visits

VLA and SAC veterinarians visit farms at the request of private veterinary surgeons, to assist with the investigation of unusual, severe or difficult disease incidents. VLA veterinarians also visit for statutory purposes (for example under the Zoonoses Order to investigate outbreaks of salmonellosis), which are also included under the totals for England and Wales.

From 2007, the VLA and SAC harmonised the way in which these more detailed investigations involving visits to farms were recorded. This is why comparable data is not available for previous years.

Table 2
Farm Investigation and Advisory Visits

Second Quarter	Total Visits		Dairy		Beef		Dairy and Beef		Calf Rearer	
	E&W	S	E&W	S	E&W	S	E&W	S	E&W	S
2008	51	5	16	3	31	2	3	0	1	0
2007	78		36		34		2		6	
2006	72		27		25		12		8	
2005	99		33		50		8		8	
2004	85		31		42		4		8	

The reduction in the number of farm visits to dairy farms is very probably due to fewer being performed for statutory and advisory reasons under the Zoonoses Order, as a result of fewer diagnoses of salmonellosis (see below).

Food Safety Incidents

The number and type of incidents investigated was very similar to last quarter:

Table 3
Food Safety Incidents

Second Quarter	Total Incidents		Botulism		Lead		Copper		Metaldehyde		Other	
	E&W	S	E&W	S	E&W	S	E&W	S	E&W	S	E&W	S
2008	31	8	9	1	19	7	0	0	0	0	3	0
2007	31		9		21		0		0		1	
2006	31		8		17		0		0		0	
2005	23		4		18		0		0		1	
2004	24		5		19		0		0		0	

Details of incidents investigated by the VLA are published in a quarterly newsletter which is available at: http://www.defra.gov.uk/vla/reports/rep_food.htm.

ENDEMIC DISEASE SURVEILLANCE

A note about the disease trends charts.

This section of the report gives selected information on data collected and analysed for diseases assigned a VIDA code, during the quarter or year. For this report, data for England and Wales and Scotland have been combined onto a single histogram. Our charts show the number of diagnoses (numerator) as a proportion of the number of submissions in which that diagnosis was possible (denominator), for all of GB, England & Wales and for Scotland. The blocks are accompanied by bars indicating 95% confidence limits – generally, the greater the number of samples examined, the smaller is this range and the greater the confidence that reported figure is true. Note that the y-axis scale of the charts varies and therefore care must be taken when comparing individual charts.

Mucosal disease

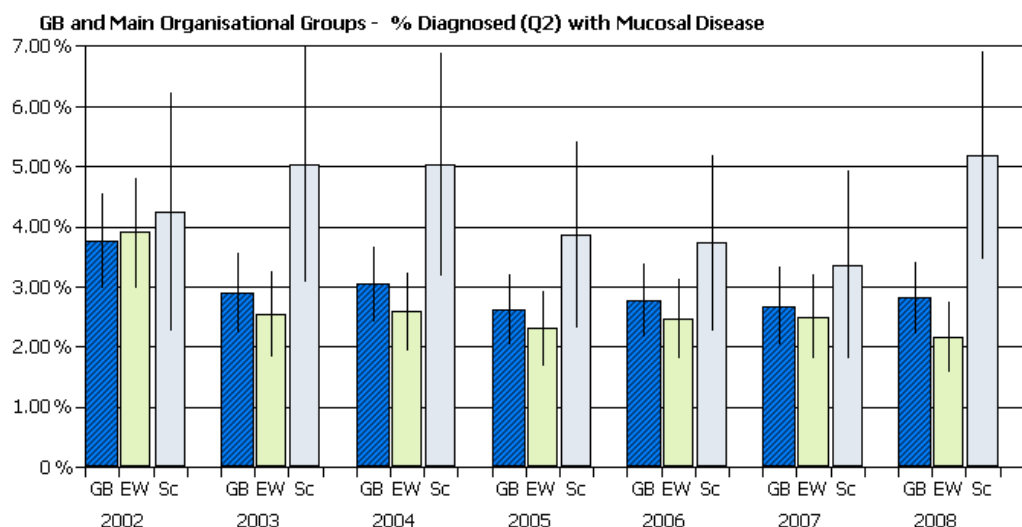


Figure 4

The number of diagnoses is remarkably similar for the last five years although on this occasion there has been a (non-significant) increase and higher number of diagnoses made in Scotland.

Over this quarter three VLA RLs reported small “outbreaks” of mucosal disease. This phenomenon occurs when a number of naïve dams are exposed to BVDV in early pregnancy:

- Typical disease affected three dairy heifers, with the first case occurring shortly after it had received the second primary doses of vaccine for *Leptospira* and BVDV. Necropsy revealed ulcers throughout the gastro-intestinal tract and on the feet. Another two animals later died with similar signs. The brain of each case was examined histologically and this demonstrated strong positive immunohistochemical staining in each, confirming persistent infection. Vaccination of the herd had started after the birth of these animals, two years earlier, thus their dams had not been protected.
- Mucosal disease was confirmed in a ten month old heifer submitted alive after presenting with pyrexia and diarrhoea. The owner reported that two more heifers had died with the same clinical presentation within the last four weeks. He also mentioned that a persistently infected animal had been identified and removed twelve months previously, having been purchased six months earlier. Subsequently, another four heifers died in the same group. The animals were from a larger group of 50 heifers, 15 of which were themselves the progeny of dairy heifers. All seven fatalities were from this sub-group of 15.
- The final incident involved a group of Limousin-cross heifers from a suckler herd. Five fatalities were reported over a two-week period with heifers developing acute diarrhoea from which some died and some recovered. The first heifer gave a positive result for a blood antigen ELISA test and the fifth gave a positive PCR result on submitted viscera. Consideration of the results and the history suggested that death may have resulted from mucosal disease or acute BVDV infection.

Johne’s disease

No significant changes in the number of diagnoses were noted.

Almost a third (32.5%) of bovine diagnostic submissions received by VLA are tested for Johne’s disease and of these a quarter (24.7%) provide a positive diagnosis.

Almost all RLs report that Johne’s disease is the most frequently diagnosed cause of diarrhoea in adult cattle.

The final report of the national survey of Johne's disease in dairy cows (project SB4022) has been submitted to Defra. Once the report has been reviewed and been formally accepted, the findings will be disseminated to stakeholders.

Fasciolosis

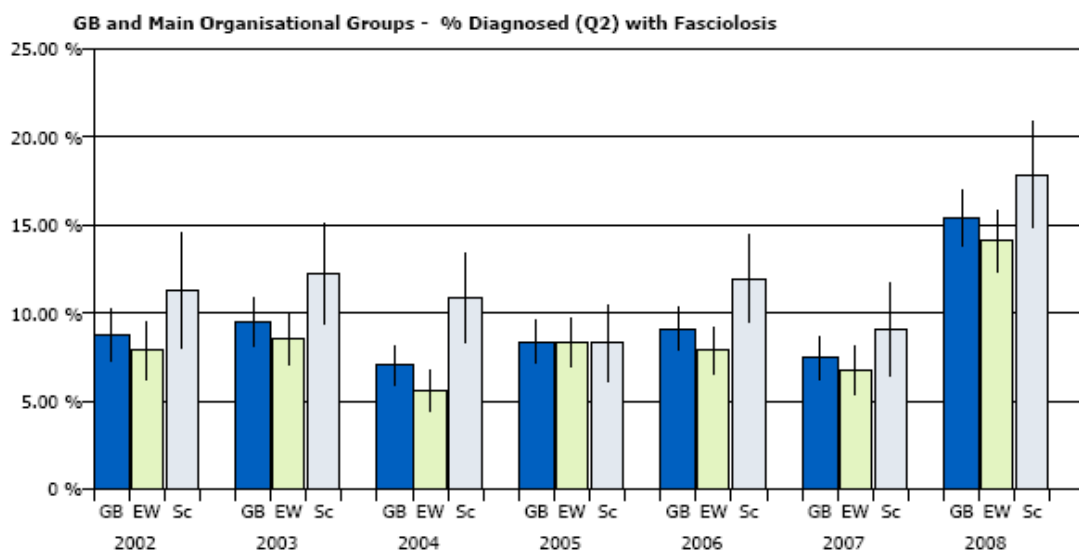


Figure 5

VIDA figures suggest a significantly raised incidence of fasciolosis in this quarter, compared to previous years. This is probably a consequence of the very wet summer of 2007, where the average rainfall was 150% of the average from 1961 to 1990. This favoured the liver fluke's life cycle leading to the higher risk of infection acquired by grazing cattle in the autumn of 2007 (Winter infection of snails). Those animals not treated going into the winter carried chronic infections into this quarter.

Traumatic reticuloperitonitis and tyre wire disease

Although there are no statistically significant changes in recorded disease incidents, a number of centres commented on the large number of cows affected in some of the incidents of tyre wire disease that they investigated this quarter. One such involved 15 out of 150 out-wintered suckler cows.

Parasitic gastroenteritis

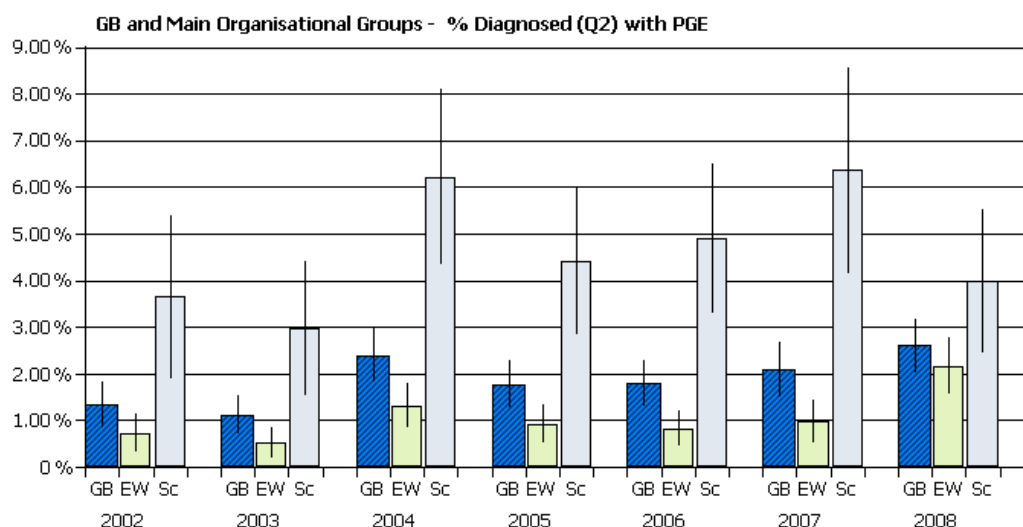


Figure 6

There is a small (significant) increase in the number of cases diagnosed in England and Wales this quarter compared with 2007. By contrast, there was a non-significant fall in Scotland. This is probably due to the dry May in Scotland (see above). The increase in England in Wales occurred in both dairy and beef animals; in calves and adult cattle and was noted by all Regional Laboratories, though least so

in Wales and the South-West. This could be due to the wetter than usual May but drier than average June in Southern areas of GB.

Nutritional and metabolic disease

The number of diagnoses of several metabolic and nutrition-related diseases rose sharply compared with the same period last year, with the many of the cases occurring in April. This may have been due to the low stocks of good quality forage and high concentrate prices.

The number of diagnosed incidents of metabolic/nutritional disease are listed in the table below:

Disease	2 nd quarter 2007	2 nd quarter 2008	April 2007	April 2008
Hypocalcaemia	31	55	12	42
Hypocupraemia	48	81	11	41
Hypomagnesaemia	25	43	11	28
Unsuitable diet	24	59	6	37

Table 4

VIOs carried out several advisory visits to affected farms, in some cases in conjunction with ADAS or the local Animal Health Divisional Office, particularly where nutritional disease led to significant impairment of cattle welfare.

In line with the high incidence of metabolic disease, a high number of **left displaced abomasa** were reported. In one incident, several affected cows were slow to recover after surgery and more than expected redisplaced subsequently. A fatality was examined post mortem and this confirmed that in addition to the abomasal problem there was severe hepatic and renal lipidosis. Material submitted from another post mortem carried out on farm made the same findings, prompting advice to check the transition and fresh rations for the herd.

On another farm of 300 dairy cows severe diarrhoea developed in a number of animals within two to ten days of calving and was associated with milk drop. Some did not recover and were dried off. Over an eight month period 143 cows calved and 36 were affected. Nine were culled and four were dried off and disposed of as culls. One cow was necropsied and had severe ulceration throughout the forestomachs and histopathological evidence of inflammation of the forestomachs and widespread mycotic infection. Again, it was suggested that the diet should be closely scrutinised.

Salmonellosis

Abortion due to salmonellosis

During April-June 2008 there were only two cases of abortion due to *S. Dublin* diagnosed, compared with nine during the same period last year. No cases were diagnosed during this quarter in Scotland.

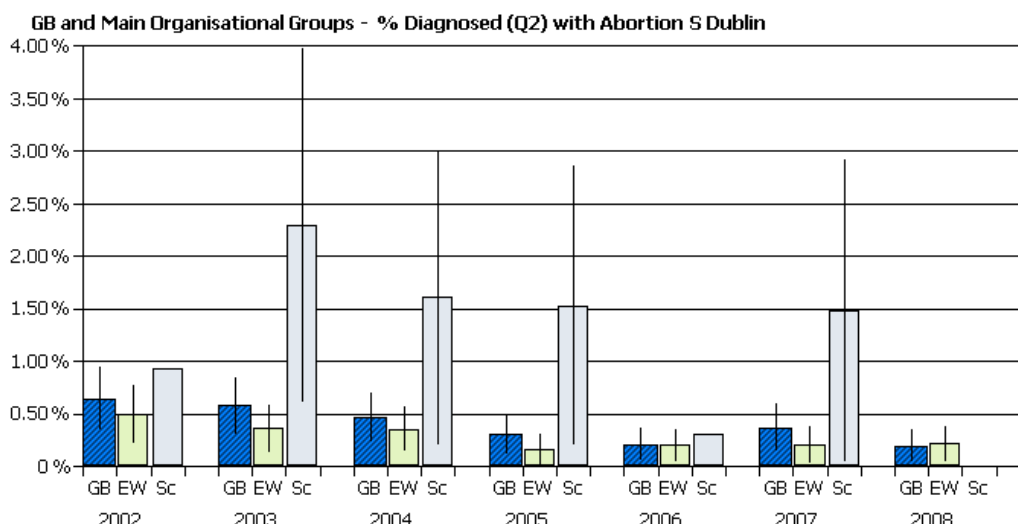


Figure 7

During this period no cases of abortion *S. Typhimurium* were recorded, compared with one over the same period last year. Only one case of abortion due to other salmonellae (compared with three last year) was diagnosed.

Other disease due to salmonellosis

Salmonellosis due to *S. Dublin* has continued to decrease, with 56 cases reported during April-June 2008, compared with 66 over the same period last year, in spite of an increase in the number of submissions compared with last year. This reduction has been seen in both England & Wales and Scotland. The reduction in diagnoses of disease due to *S. Dublin* since 2002 is statistically significant.

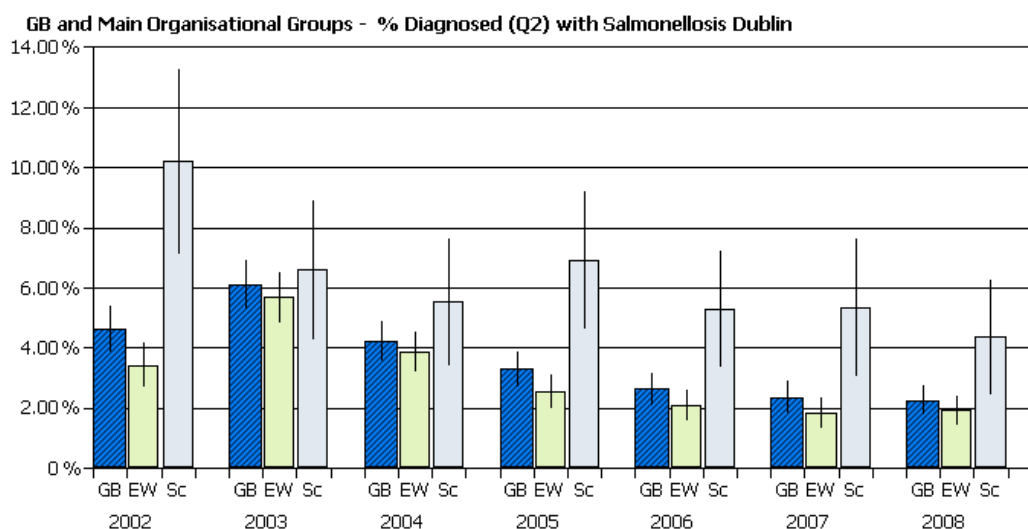


Figure 8

The number of incidents of salmonellosis *S. Typhimurium* has also continued to decrease, with nine cases diagnosed, compared with 15 over the same period last year. This decrease reflects a reduction in England & Wales only.

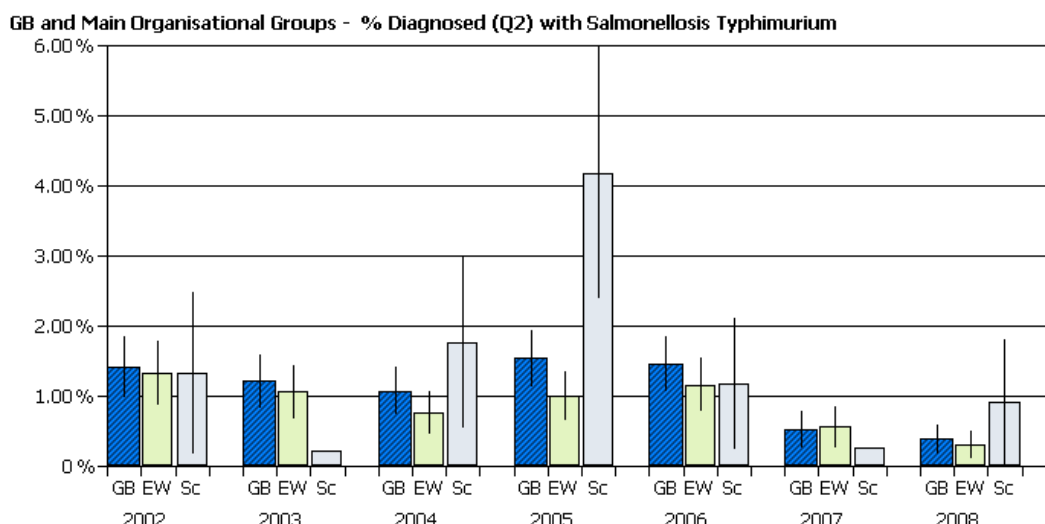


Figure 9

However the number of incidents of salmonellosis caused by **other serotypes** has remained static, with 20 cases during April-June 2008, compared with 21 cases over the same period last year.

SAC, with Animal Health, investigated the possible source of an outbreak of disease due to **Salmonella Bovis morbificans**: The farm carried 150 suckler cows, 70 of which were housed in a cubicle shed. None of these animals were affected. Of the remaining 80 outwintered cows, 30 animals became ill and required treatment with antibiotics. One cow died, a further three aborted and two calves were stillborn. The clinical signs varied from cows that were dull and anorexic to those with profuse diarrhoea and pyrexia. No neonatal calves were affected. Samples were taken from the water supply, the feed and chicken and duck houses on the farm but no salmonellae were identified. Possible risk factors included the presence of wild deer carcasses found on the land. Information from Scottish marine mammal surveillance suggests that *Salmonella Bovis morbificans* is the most common Salmonella isolated from seals and the affected EW farm was close, but not adjacent to the coast. The possibility of spread from seals through wild animals or birds could not be ruled out.

UNUSUAL AND NEW DISEASES

This quarter, most investigations of unusual and new diseases involved either the nervous system or skin.

Bluetongue

A 12 day old calf born to a cow that was positive for antibody to bluetongue-8 virus was examined by VLA Winchester as part of a study on the overwintering of bluetongue virus by means of transplacental transmission. The calf had been dull since birth, tended to separate itself from the other calves and although it had a good suck reflex, sucked only for short periods. Necropsy revealed marked attenuation of the cerebral hemispheres whereas the cerebellum and brainstem appeared to be intact. Detailed histopathological examination confirmed a severe hydranencephaly but granulo-prival-type cerebellar dysgenesis and retinal dysplasia were not detected (in contrast to calves with midgestational BVDV infection-induced brain lesions). These changes in the brain are similar to those reported recently in the bluetongue serotype 8 epidemic in the Netherlands (Wouda and others (2008) Veterinary Record 162, 422-423).

A letter was published in the Veterinary Record and a full report posted on the VLA's website describing an investigation in 2007 and 2008 into bluetongue report cases where cattle had clinical signs suggestive of the disease but where bluetongue was not confirmed by standard laboratory testing (BT PCR and antibody ELISA) and where the reporting veterinary officer or private veterinarian remained concerned about the possibility of BTV infection. The aim of the study was to determine whether these disease incidents were due to a known endemic disease or a potentially new or unrecognised disease and was carried out by the VLA under the scanning surveillance contract funded by Defra to support the

detection and investigation of new or emerging diseases. Photosensitisation, malignant catarrhal fever and bovine virus diarrhoea were the main differential diagnoses. (Holliman and Watkins, The Veterinary Record, **163**, p163 and http://www.defra.gov.uk/vla/diseases/docs/dis_bluetongue.pdf).

Nervous diseases

A case of **Congenital Hypomyelinogenesis of Hereford (CHH)** cattle was diagnosed. This is thought to be a breed-related condition but is histopathologically different from Maple syrup urine disease. A one day old calf was submitted alive exhibiting whole body tremor which became exaggerated when stimulated, and horizontal nystagmus. The animal was negative for BVDV; infection with which in early gestation can cause hypomyelinogenesis with a similar clinical presentation.

Congenital encephalopathy with cerebellar and cerebral lesions was diagnosed in a pedigree Aberdeen Angus. It had been recumbent since birth, was hyperaesthetic to touch and had horizontal nystagmus. Although the cerebellar lesions had some similarities with cerebellar abiotrophy previously reported in this breed, the neurological signs and presence of cerebral lesions differ from previous reports. Another Aberdeen Angus calf, from an unrelated herd, with similar lesions was investigated by VLA in 2005, suggesting the possibility of a breed-related disorder.

Two calves that were necropsied 24 and 48 hours after having been disbudded had unilateral lesions of cerebral and meningeal necrosis with bacterial infection, consistent with **heat-induced cerebral injury**. Similar lesions have been recognised in goat kids after disbudding. One other calf was also affected a day later but not presented to the VLA. All the calves were disbudded on the same day with 26 others which have remained clinically normal. The operator was experienced and had similarly disbudded around 150 calves each year for the past 20 years.

A newborn, live Holstein calf in lateral recumbency with convulsions affecting the head had a low grade **leucomyelopathy** of suspected metabolic or toxic aetiology. The lesions were similar to, but much less severe than, those of degenerative axonopathy reported in neonatal Friesian/Holstein cattle in Australia.

Skin diseases

Multiple, cutaneous **mast cell tumours** were diagnosed after the submission of a skin biopsy from a four year old Limousin cross heifer. The animal was systemically well but had masses on the skin of the thigh and flanks ranging from about two to 20 cm diameter. These appeared to have developed over about three weeks. The masses were described as pruritic, probably due to release of histamine and other mediators of inflammation by mast cells. Mast cell tumours have been described previously in cattle but are considered to be very rare. They are malignant and a potential differential diagnosis of the notifiable viral disease, enzootic bovine leucosis.

VLA Bury investigated two incidents of parapox infection:

In the first, a 30 cow suckler farm with a history of unexplained disease in adults and calves developed signs of “blister-like lesions” on the teats of the suckling cows and papular oral and muzzle lesions in young calves. Parapox virus was detected by electron microscopy or immunohistochemistry and histological features of the lesions were typical. The same parapox virus is believed to cause bovine papular stomatitis in calves and pseudocowpox in cows. It was considered that the widespread presence of lesions in all ages of stock was due to the herd being previously naïve. The incident was noteworthy because of the very high incidence of lesions, over a long period of time; similarities of the lesions with those of bluetongue and the potential of infection to spread to people: one person in contact with affected cows developed similar skin lesions but it was not confirmed if these were due to the same virus.

The second affected two calves born in a seasonal breeding herd of 40 housed suckler cows that had developed erosions on the muzzle, lips and oral mucosa. Both calves had failed to thrive from birth; lesions developed at around two months of age and persisted for three weeks in one calf and one week in the other, and were still present when each died. Both calves tested negative for Bluetongue and BVDV. On post mortem one had an umbilical infection and pneumonia, the second had only a few

ulcers in the oesophagus. Parapox virus was identified by electron microscopy in the second calf and histologically by immunohistochemistry (IHC) in the first calf. The dams of these two calves were over 10 years old were in poor condition. It is possible that the calves had failed to thrive due to poor milk from the mothers and the parapox infection had developed into a distinct clinical condition in these two calves.

Liverpool Surveillance Centre investigated a mass that was surgically removed from a two day old calf, involving the eyelids and sclera. Grossly, it consisted of black-pigmented and partly haired skin covering fibrous connective tissue, adipose, acinar glandular tissue and cartilage. Histopathology confirmed that the mass was a **dermoid**, which is a congenital, non-hereditary developmental lesion of cornea, sclera, conjunctiva or eyelids. These occur in all species but are rare in cattle – one survey estimated their annual incidence as 0.002% per year (Yeruham *et al*, Rev Vet Med, 2002, **153**, 91-92).

Malignant Catarrhal Fever (MCF)

Following a recent report of MCF in adult cattle resulting in predominantly enteric lesions with acute diarrhoea as the main clinical sign (Holliman *et al*, Vet Rec, **161**, 494, 2007), VLA Winchester investigated a similar presentation in 8-12 week old housed suckler calves.

Six out of 13 calves in the group developed disease and all died. Three were necropsied: the first had necrotic typhlitis and colitis. The second calf also had multifocal ulcerative enterocolitis and also severe multifocal tubulointerstitial nephritis. The third had similar but less severe lesions to the first, plus multiple erosions on the nasal mucosa.

In all three OvHV-2 viral DNA was detected by PCR in spleen or lymph nodes.

The affected animals and their dams were housed adjacent to, and in contact with, bought-in, hogget lambs. No lambing ewes were present in the housing.

This is the first report of enteric lesions of MCF in calves of this age. Experimental infection with OvHV-2 virus infection in cattle has shown that infected adolescent sheep aged from 5 to 8 months pose the greatest risk of MCF infection to cattle (Hong Li *et al*, Journal of Clinical Microbiology, **42**, 5558-5564, 2004).

Babesiosis

VLA Langford reported babesiosis resulting in haemoglobinuria and pyrexia, followed two to four days later by abortion in 15 of 30 pregnant heifers and young cows grazing two adjacent fields.

Profuse numbers of *Babesia* protozoan parasites were detected in blood samples from two acute, pre-abortion cases but not in six post-abortion samples received. However the clinical signs and history in all animals were very suggestive of babesiosis.

Young calves, which are naturally resistant to this disease had previously grazed this grassland, which was known to harbour ticks. It had become overgrown (which probably favoured tick activity) due to late stocking and the pregnant cattle had not had previous exposure or immunity. This is a high morbidity for bovine babesiosis and an extremely high incidence of abortion in affected animals. Livestock owners should be aware of the high risk of tick-borne diseases (some of which are zoonotic) if they introduce naïve, susceptible animals to tick habitats.

Clostridial epsilon intoxication was diagnosed twice in this quarter: First, in a two day old Charolais-cross calf that had been found in respiratory distress with a very high heart rate but normal temperature. Serous fluid was present in the rumen and abomasum but there were no other significant gross findings on necropsy. Although toxin could not be demonstrated in intestinal content, histological examination of the brain showed lesions of an acute bilateral necrotising encephalopathy consistent with clostridial toxæmia.

Secondly, in a six month old bullock in which (unlike the case in the very young calf), *Clostridium perfringens* epsilon toxin were identified in small intestinal contents. The bullock died suddenly after turnout and had an haemorrhagic enteritis. The epidemiology and pathogenesis of clostridial epsilon intoxication are not clearly understood in cattle and more work is required both to understand these features and to establish accurate diagnostic criteria.

A 1,200 cow dairy herd experienced sporadic unexplained rapid deaths. The pluck of one cow which had died after a short period of severe respiratory distress showed approximately 80% of the total lung volume was affected with severe fulminating bronchopneumonia, marked interlobular oedema and a fibrino-purulent pleurisy. *Mannheimia haemolytica* was isolated in pure growth. Sporadic peracute

pleuropneumonia cases in adult dairy cows have been reported by RLs since the early 1990s and there is the suggestion that this may be an increasing trend. Counterparts in the Netherlands have reported an increase in diagnoses of this disease. The aetiology is not understood and the cases sometimes lead to the suspicion of Contagious Bovine Pleuropneumonia, a notifiable disease.

Fungal pneumonia was diagnosed in a two-week-old pedigree Charolais suckler calf. Necropsy showed pneumonia, pleurisy and a severe joint ill with histological evidence of fungal invasion of the lung tissue and fungal involvement in the pleurisy. *Aspergillus fumigatus* was isolated from lung tissue.

SCANNING SURVEILLANCE FOR NEW AND EMERGING DISEASES IN CATTLE

Monitoring the trends in diagnoses of known diseases cannot, by definition, detect either new diseases or changes in endemic diseases that would prevent a diagnosis from being reached (for example a change in the pathogen that compromised the usual diagnostic test). Such new or emerging diseases would be most likely to be detected by observation of increased numbers of clinical and/or pathological syndromes for which a diagnosis could not be reached in the normal way. Such submissions are regularly analysed to look for changes that could indicate the presence of a new or emerging disease, which may be reflected by an increase in undiagnosed disease. Undiagnosed disease submissions are summarised broadly by the clinical presentation of disease and, once this has been determined by further investigation, the body system affected. Both groups are investigated and trends in the rates are compared over time.

Data for Scotland and, therefore, the whole of GB for the analysis of undiagnosed disease is available from 2007 but is available for five years for England and Wales. The latter has been pooled and is consulted for comparative purposes where appropriate.

Supplementary analysis of DNR data is also undertaken using an Early Detection Model. By inputting data from January 1999 to the present time (omitting 2001 due to low numbers of submissions) into an early detection model, expected and threshold values are derived, together with exceedence scores. Values which exceed the threshold by a significant amount indicate that a potentially important rise in “diagnosis not reached” has occurred.

Analysis of GB data

Table 5 shows the rates of non-diagnoses, subdivided for each body system in which the presenting disease primarily occurred, with comparisons to the equivalent quarter of 2007 and the previous quarter of 2008.

During the second quarter of 2008 the proportion of diagnostic cattle submissions in which a diagnosis was not reached was 27%, unchanged on the equivalent quarter of 2007 and on the first quarter of 2008.

For each body system, there were no significant changes in the number of undiagnosed submissions for the whole of GB when compared to Q2, 2007. However, when compared to the first quarter of 2008, there was a statistically significant increase in the number of submissions from cattle with “systemic and miscellaneous disease”. This may be due to the greater number of submissions from cows with metabolic conditions associated with turnout to grass and poor quality forage (see above) – some of these diseases are difficult to diagnose categorically and will have accounted for this increase.

Table 5

Summary of the changes in undiagnosed disease for GB cattle between this quarter, the equivalent quarter of last year (Q2, 2007) and the previous quarter (Q1, 2008).

SYSTEM	2007 Q2 (%)	2007 Q2-2008 Q2	2008 Q2 %	Q1 2008-Q2 2008	2008 Q1 (%)
Circulatory	7	↑	15	↑	11
Enteric	27	↓	26	↑	24
Musculoskeletal	27	↓	23	↑	14
Nervous	11	↑	25	↑	12
Reproductive	44	=	44	↑	42
Respiratory	15	↓	13	↓	15
Skin	33	↑	37	↑	21
Systemic & miscellaneous	16	↓	14	↑↑	11
Urinary	14	↓	8	↑	0
Overall	27	=	27	↑	26

↓↓= significant decrease ↑↑ = significant increase.

Early detection model

An “early detection model” has been developed for VLA (England and Wales) data. This compares monthly rates of non-diagnoses with the historical record. Using this model, an increase was noted for both nervous and skin disease in April, but these were not statistically significant.

Comment

The monitoring and surveillance system for undiagnosed disease in cattle has recently been modified to include data from the SAC and expand the target population to GB cattle. However, there are limitations as the previous system, for VLA data only, employed five years of pooled data for comparison. SAC data is only available from 2007 and so in this report the figures for 2008 and only compared with figures from 2007. As stated, as time progresses there will be more data years available for comparison. In the present report, no statistically significant changes were noted for this quarter for GB cattle.