

## **VIDA 2004**

### **INTRODUCTION**

#### **Source of Data**

The Veterinary Investigation Diagnosis Analysis database - VIDA - contains a record of every submission made to Veterinary Laboratories Agency (VLA) Regional Laboratories (RLs) and Scottish Agricultural College (SAC) Disease Surveillance Centres (DSCs) in Great Britain and has been operating since 1975. In England and Wales there are fifteen such centres which form part of the Surveillance Division of the Veterinary Laboratories Agency. In Scotland there are eight centres, administered by the Scottish Agricultural College. All twenty three centres contributed information for inclusion in 2004. The total number of submissions received in 2004 was 128,118. This includes the total number of diagnoses given in the tables and submissions for which no diagnosis code was recorded. It should be noted that a submission could have more than one diagnosis. As well as the production of this booklet, VIDA is also used for ad hoc investigations, and in 2004 CERA (previously called the Epidemiology Department) of the VLA Weybridge received 70 such requests for information, involving 781 individual data retrievals.

#### **Disease and species code changes in VIDA in 2004**

There were 13 new disease code changes made in 2004, seven in cattle, two in small ruminants, two in pigs, one in birds and one in miscellaneous. These are shown in more detail below.

## New codes for cattle

Group	Code Number	Diagnosis
Group 2 – Diseases of the digestive system	184	Traumatic reticuloperitonitis
Group 9 – Diseases of the reproductive and mammary system	703	Mastitis – no microbial growth
	704	Mastitis – microbial findings suggestive of sample contamination
	707	Mastitis due to <i>Serratia</i> species
	708	Mastitis due to <i>Citrobacter</i> species
	709	Mastitis due to rapid growing acid-fast bacilli
	710	Mastitis – two different organisms isolated, no other VIDA code applicable

## New codes for small ruminants

Group	Code Number	Diagnosis
Group 1 – Systemic diseases	181	<i>Pasteurella trehalosi</i> septicaemia
Group 7 – Diseases of the skin	382	Ectoparasitic disease caused by lice

## New codes for pigs

Group	Code Number	Diagnosis
Group 3 – Diseases of the respiratory system	159	Pneumonia associated with PCV2 – including PNP
Group 7 – Diseases of the skin	396	Facial necrosis of piglets

## New codes for birds

Group	Code Number	Diagnosis
Group 1 – Systemic diseases	355	Circovirus infection of pigeons

## New codes for miscellaneous

Group	Code Number	Diagnosis
Group 2 – Diseases of the digestive system	662	Gastric ulceration

## Bias in VIDA

Total numbers of submissions recorded by VIDA represent only the material submitted to VLA Regional Laboratories and SAC DSCs for investigation. This bias is influenced by many factors including, for

example, the particular clinical presentation of a suspected disease, the level of awareness of a disease and its perceived importance, the value of the animal or animals affected, and the general economic climate. Particular diagnoses may be affected by improved scientific methods, and knowledge of this may also affect rates of submission; these factors will usually vary differentially with time. This bias should be considered when interpreting both individual figures, and apparent trends, from VIDA data.

VIDA diagnosis totals are intended to represent only cases of clinical disease, hence the necessity for the category “DIAGNOSIS NOT APPLICABLE” (code 991) and “SCREENING – No clinical problem” (code 980). Included under this umbrella are the results of, for example, samples sent to VLA Regional Laboratories for non-diagnostic testing, plus results of tests performed by one VLA Regional Laboratory on behalf of another (usually because of specialist facilities), when the diagnosis will be recorded by the VLA Regional Laboratory to which the sample was originally submitted. When examining annual diagnosis figures for a particular disease, it is therefore advisable to relate them not just to the total diagnoses in that year and class, but also to exclude submissions where the diagnosis is 'not applicable' and those for “screening – no clinical problem” before comparing one year with another. Total submissions excluding 'not applicable' and 'screening' are referred to as 'diagnostic submissions' (see Table 1).

### **FOOT AND MOUTH DISEASE OUTBREAK 2001**

On 20 February 2001, Foot and Mouth Disease (FMD) caused by the O1 Pan Asia strain of virus was confirmed in Great Britain. A Controlled Area Order was imposed across the whole of the country on 23 February 2001, which prohibited the movement of livestock except

under official control and banned livestock markets. During the subsequent epidemic, 2,026 outbreaks were confirmed. The final confirmed outbreak was on 30 September 2001.

FMD was controlled by the slaughter of infected animals and animals that were judged to be dangerous contacts. More than three million sheep, 500,000 cattle and 140,000 pigs were killed, from more than nine thousand holdings. Approximately two million additional animals were slaughtered under the Livestock Welfare Disposal Scheme, bringing the total to more than 6 million animals. On the basis that no cases of FMD had occurred for three months and extensive statistically based serological surveys, every administrative area in Great Britain had achieved FMD free status by 14 January 2002 – three and a half months after the last outbreak was confirmed. The European Commission recognised Great Britain's FMD-free status through Commission Decision 2002/153/EC of 20 February 2002 which repealed requirements to provide FMD related certification for intra-community trade. Further information about the 2001 FMD epidemic can be found on the DEFRA website <http://defraweb/footandmouth>.

The FMD epidemic impacted upon surveillance in two distinct ways. Firstly, the outbreak caused significant disruption to normal farming practice with unpredictable consequences for the incidence of infection. Secondly, surveillance activities were constrained. VLA laboratories were unable to accept samples from infected areas and cattle, sheep or pig carcasses from any areas between late February 2001 and October 2001. Field visits were halted from late February 2001 but essential visits were later permitted providing strict Agency procedures were followed.

Cattle submissions to the VLA Regional Laboratories (RLs) were reduced by 36.9% in comparison to 2000 and the eight-month

prohibition of any carcase movement for diagnostic purposes resulted in a 77.4% reduction in cattle carcase diagnostic submissions. Sheep submissions to the laboratories were severely restricted from the end of February for the remainder of the year, and in total there was a 64% decline in England and Wales. However, scrutiny of the January and February data notes that early year data was comparable with the previous year. Diagnostic submissions, particularly carcase submissions, were also significantly reduced in 2001 for pigs and goats.

## **TRENDS IN 2004: LIVESTOCK POPULATIONS AND WEATHER CONDITIONS**

Changes in both the total number of animals in each category of livestock and the climatic conditions over the year may affect the overall disease situation, and thus the totals recorded in this publication. A summary of both is therefore given below.

The 2004 livestock data is taken from the June Agricultural Census figures (MAFF statistics 2004) for Great Britain. In editions of this booklet before 1997 the livestock figures published were taken from the December census and have covered United Kingdom. Because of this difference, the livestock data presented in this and future editions of the VIDA booklet cannot be directly compared to that in editions of the book prior to 1997.

The information on weather conditions has been obtained from Royal Meteorological Society monthly reports for 2004.

### **Livestock population**

#### **Cattle**

The total cattle population, including calves, in Great Britain increased by slightly (1.05%) in 2004 to just over 8.9 million animals.

#### **Dairy Cattle**

The total dairy herd fell by 1.9% in 2004 and currently stands at just over 2.2 million animals.

#### **Beef Cattle**

There was an increase of 1.8% in the total beef breeding herd in 2004 to just over 1.6 million.

## **Sheep**

There was a small increase (0.2%) in the total sheep population including lambs in 2004 and the national flock now stands at almost 34 million animals. The total adult sheep flock also increased (by 7.6%) and now stands at just under 17 million.

## **Goats**

The total goat population increased by 3.8% in 2004 to almost 89,000 animals.

## **Pigs**

There was an increase of 2.7% in the total pig population in 2004 which now stands at just over 4,700,000.

## **Poultry**

The number of laying fowls for eating egg production increased by 1.2% to just over 27.3 million. There was also an increase in the number of broilers and other table fowls (0.9%) to just under 105 million birds.

## **Meteorological data**

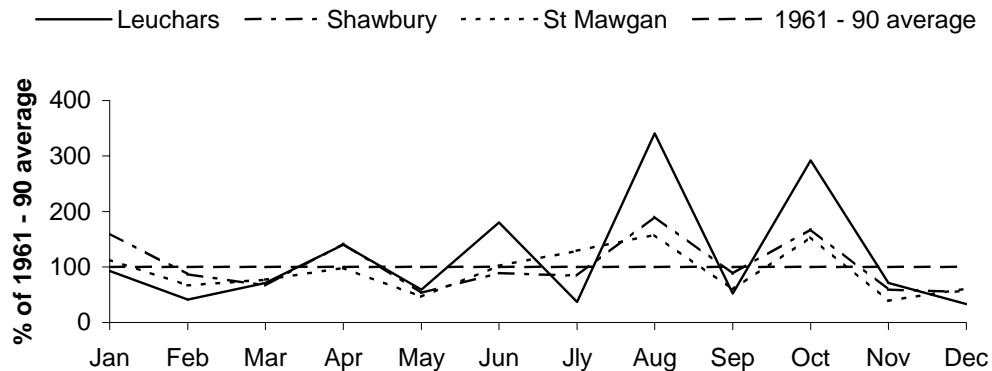
For the location of the weather stations referred to in Figures 1 and 2 please see the map inside the back cover.

For the most part January was mild with frequent rain. The beginning of the month was cold with widespread frost and snow in Scotland and northern England, but a south-westerly airflow brought very mild weather during the second week of January with widespread rain on most days. This mild weather lasted for the rest of the month, apart from several cold and snowy days in the middle and end of the month.

February was a month of contrasts. The first half of the month was warm and wet, the warmest (together with 2002) since before 1869, whilst the second half was the coldest since 1986. During the first week of the month exceptionally heavy rain in Wales, and parts of north west England and south west Scotland brought flooding to some areas and it remained damp and dull for the second week with occasional wintry showers. From mid-month onwards it became much colder and sunnier, however occasional light snow reported was in some areas and during the last two days of February snow fell over most of the country.

The first few days of March were cold with frosty nights and sunny days, and snow lying over many northern and eastern districts. The weather then changed and it became cloudier and milder, although there were still night frosts in some areas. During the second half of March it was fairly cold with frequent showers, especially in the west, and many of the showers were accompanied by thunder, hail and sleet. The cold, rainy weather continued into April when the frequent, heavy showers were again accompanied by thunder and hail. These conditions continued for much of April, broken only by a week of dry, sunny weather around the middle of the month. Overall April was warm, the 13<sup>th</sup> warmest in the last 100 years, but in contrast to the warm Aprils of 2002 and 2003, April 2004 was exceptionally wet in most areas.

**Fig 1: Rainfall as a percentage of the 1961 - 90 average at three places in Britain in 2004**

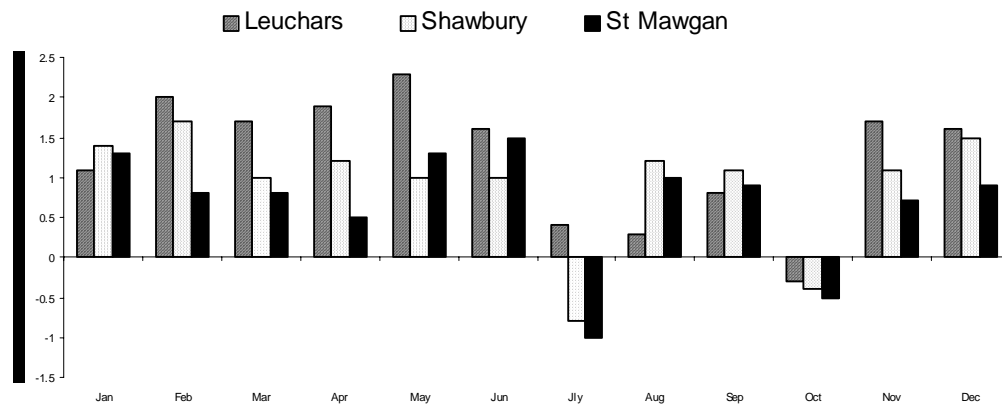


May was another month of contrasts, starting dull, wet and cool and then becoming warm and sunny. Overall, it was the warmest May for three years and sunshine levels were well above average in all areas except northern Scotland, and local areas of the Midlands and East Anglia. June was cloudy and wet over much of Scotland and northern England, but relatively dry and sunny in southern England. The first two weeks of the month were generally settled and warm, but then a depression brought cooler, windy weather with occasional rain or showers. The amount of rain in southern England was small, but in Scotland there was widespread thunder and hail. This unsettled weather continued until the end of June when there was widespread rain, hail and thunder.

July too was changeable and cloudy. Rainfall in parts of Scotland was less than 40% of the average for July, but more than double in parts of East Anglia and the east Midlands. The last five days of the month were very warm in most places with scattered showers and local thunderstorms. The hot weather continued throughout the first week of August and there were widespread thunderstorms. During the second week of August a deep depression brought thundery and often humid conditions and prolonged heavy rain affected all areas except northern

Scotland. The heavy rain brought flooding to many areas, including Cornwall and short-lived tornadoes were observed on several occasions. Wet weather continued until the last few days of August when it became dry and sunny almost everywhere. The mean temperature for August was slightly above average, but the heavy rainfall throughout the month made it the wettest August in England and Wales since 1956.

Fig 2: Differences in temperature from the 1961 - 90 average at three places in Britain in 2004



Monthly sunshine totals for September were above average almost everywhere in Great Britain and the mean monthly temperature was about 1<sup>o</sup>c above average. In eastern, central and southern regions it was the third consecutive dry September. By contrast October's rainfall was above average in all regions and it was the fourth wettest October recorded in the last 18 years. There was a notable absence of warm days and although south-east England was slightly warmer than average, Scotland was cold. Low pressure settled over the whole country in the middle of October, bringing widespread rain with localised thunder and, in a few areas, flooding and tornadoes. The rain and wind was worst in south-west England where there was serious coastal flooding.

November was the 20<sup>th</sup> warmest in the last 100 years. There was frequent, light rain but rainfall totals were well below average everywhere, and in England and Wales it was the driest November since 1988. Most areas were dull with sunshine levels below average in all areas except eastern Scotland. The dull conditions continued for the first two weeks of December and most southern, central and eastern parts of Great Britain had little, if any, rain during this period. The second half of December was more sunny, but also unsettled with heavy rain and gales. Snow or sleet fell over high ground in Scotland, Wales and western areas of England on some days, but the final few days of the month were very mild.

## DISEASE TRENDS IN 2003

### CATTLE

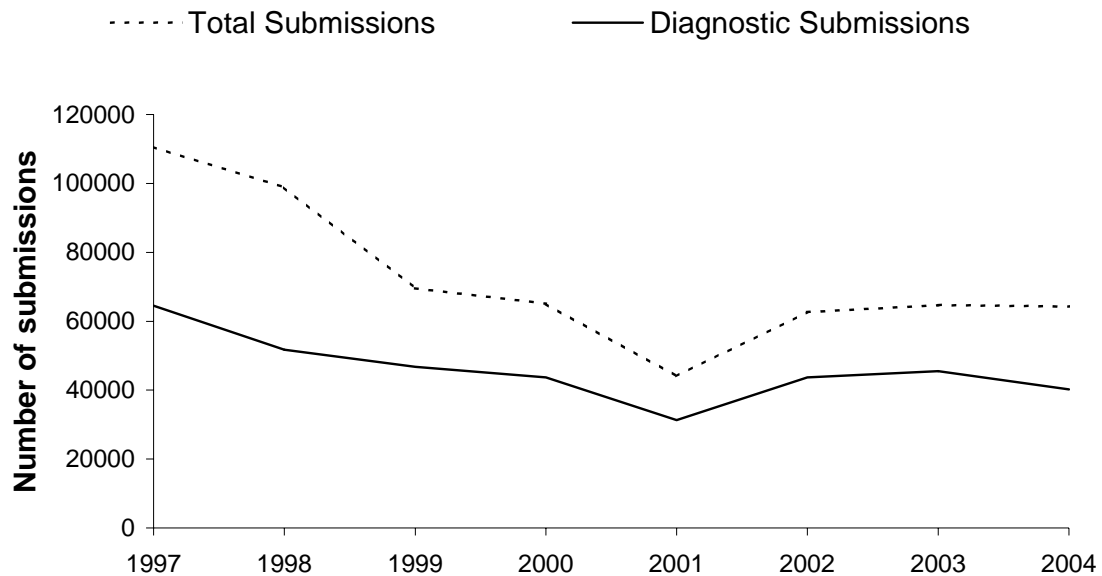
#### General

Excluding 2001 and the effects of Foot and Mouth, the number of diagnostic submissions received in 2004 were reduced in comparison to recent years.

The possible reasons for this was a 1.9% reduction in the total dairy herd in 2004, and reduced profitability in dairying as a consequence of static or reducing farm gate milk prices.

However carcase submissions, with their better disease surveillance potential, were 27% higher than in 2000.

**Fig 4: Total cattle submissions in GB 1997 - 2004**



Overall 2004 was one of the warmest and wettest on record. Grass grew in abundance, but the frequent wet conditions often made

harvesting difficult for both grass and arable crops. This resulting in silages of variable quality and a shortage of feed quality straw.

The weather conditions also predictably favoured some diseases, notably parasitic gastroenteritis (PGE), with significantly more diagnoses recorded than in previous years.

### **Respiratory Disease**

Pneumonia was a widely reported condition particularly in young cattle. There was little change in the number of bacterial pneumonias due to *Mannheimia* sp., *Pasteurella multocida*, and *H. somnus*, recorded.

There was however a reduction in the number of diagnoses recorded due to Respiratory Syncytial Virus (RSV), Parainfluenza 3 virus (PI3) and parasitic pneumonia (Husk).

There has been little change in the number of IBR diagnoses recorded in recent years.

Although Malignant Catarrhal Fever is still a comparatively rare clinical disease there has been a steady increase in the diagnoses recorded over this period.

### **Reproductive Disease**

Official *Brucella* BS7 abortion investigations reduced by 75% over this eight year period as a consequence of change in policy targeting aborting beef and dairy heifers, together with beef cows. The latter, because unlike dairy cows, do not have their milk routinely screened for *Brucella abortus* infection.

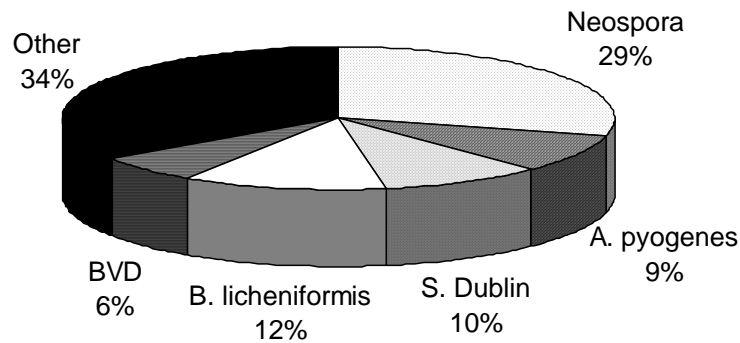
*Brucella abortus* biovar 1 was isolated from a small southwest suckler herd following a BS7 abortion investigation. Appropriate steps were taken to ensure GB retained its EU “Official Brucellosis-Free Status”.

It should be noted that all other non BS7 abortion investigations are routinely screened for *Brucella*.

Abortions occurred usually as sporadic events, occasionally as “clusters” and rarely as “storms”. Overall there has been little change in the organisms involved.

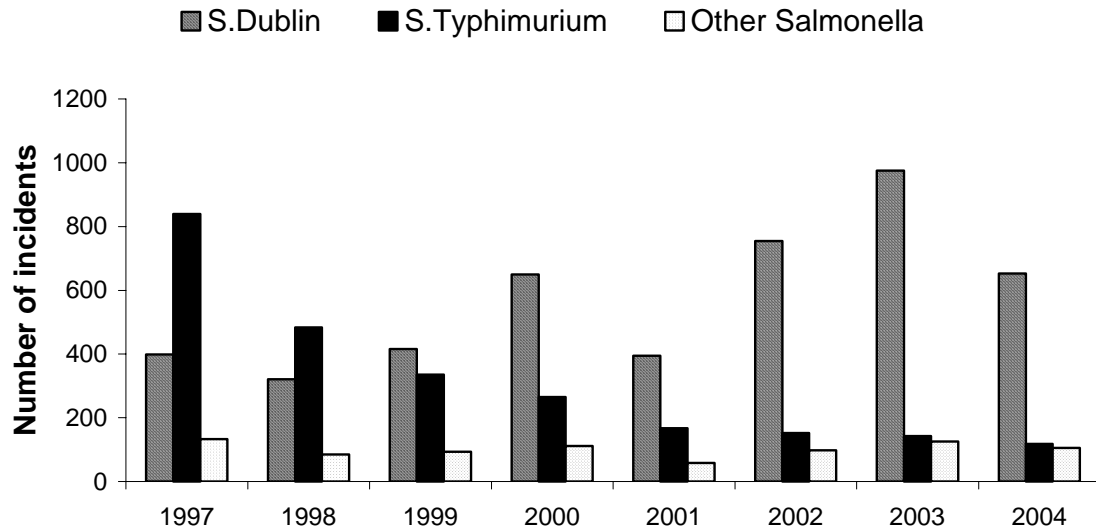
The most common cause of abortion remains Neospora, accounting for 29% of the foetopathy diagnoses reached. The second most common abortifacient is *Bacillus licheniformis*, usually resulting from mould contamination of conserved forages and more prevalent in the western and wetter half of the country.

**Fig 5: Diagnosis of bovine fetopathy in 2004 (excluding "fetopathy diagnosis not reached") as a percentage of all bovine fetopathy diagnoses (n=962)**



## Salmonella

**Fig 6: All incidents of salmonellosis other than fetopathy in cattle 1997 - 2004**



The incidence of *Salmonella* Typhimurium has continued to decline. It is now rarely associated with abortion with only one case recorded in 2004. *Salmonella* Typhimurium DT104 was responsible for 57% of all S. Typhimurium incidents recorded in 2004. The concern from previous experience of S. Typhimurium cycles is the possibility of another “epidemic strain” emerging to fill the gap.

Another feature of such cycles is the increase in *Salmonella* Dublin, though this tends to follow a less predictable and shorter cycle pattern than S. Typhimurium. Despite this the number of S. Dublin abortions has been consistent in recent years, accounting for 10% of abortions in 2004.

The number of other *Salmonella* serovars has remained comparatively similar. In 2004 the most common other serovars were in order,

S. Anatum, S. Agama and S. Agona. There were also increases in the number of S. Binza, S. London, S. Schwarzengrund and S. Vejle incidents recorded.

## Calf Scour

**Table 2: Neonatal calf scours – pathogens expressed as a percentage of cases recorded.**

Pathogen	1997	2004
Rotavirus	(48%) 49%	(47%) 46%
Cryptosporidia	(34%) 34%	(43%) 44%
Coronavirus	(17%) 17%	(10%) 10%

The change in the percentage of the main calf scour pathogens recorded, excluding *Salmonella*, over the eight-year period was similar to that reported for the period 1996-2003, with rotavirus and cryptosporidia the principal pathogens. Hypogammaglobulinaemia continued as a major precipitating factor for these pathogens with the number of diagnoses recorded increasing from 151 in 1997 to 221 in 2004.

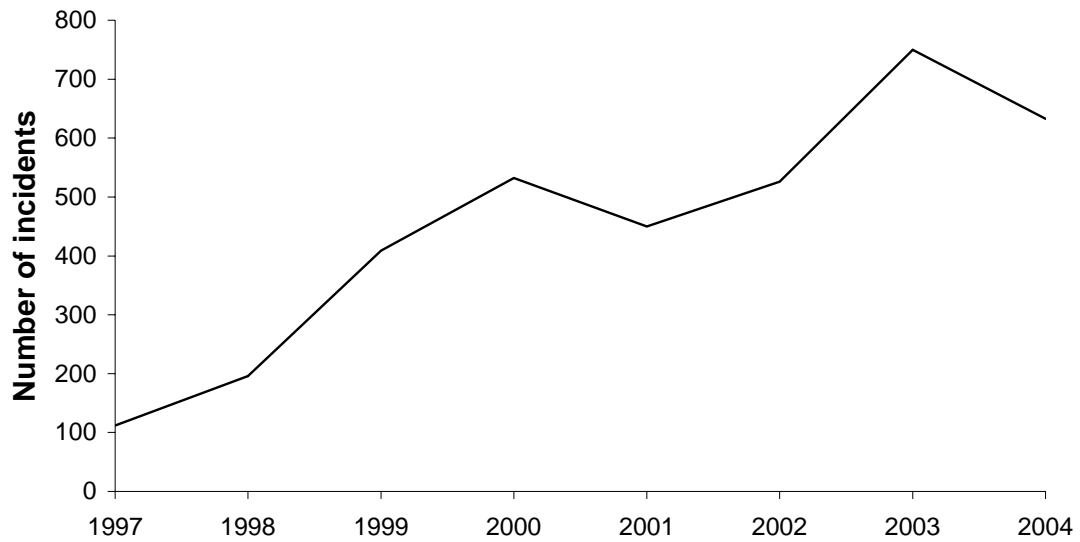
The number of coccidiosis cases has fallen from 706 to 514 over this period.

Since its recognition the incidence of Idiopathic Necrotising Enteritis of beef suckler calves has risen over the last four years. As indicated by its name, this condition had previously been exclusively recognised in suckler calves. However, in 2004 it was confirmed in a dairy calf for the first time.

## Parasitic

The increase in Parasitic Gastroenteritis (PGE) already been commented on in the General section.

**Fig 7: All incidents of fasciolosis in cattle in 1997 - 2004**



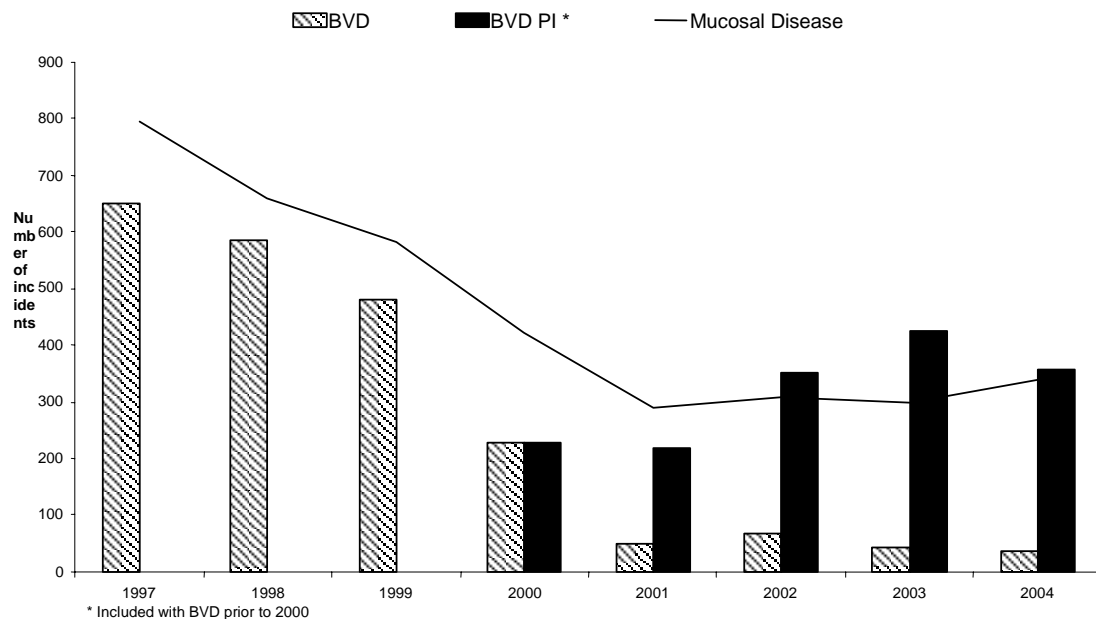
Similarly the wet weather during the summer months led to an expectation of increased fasciolosis in cattle, which ultimately did not occur. This may have been due to the previous year being very dry, resulting in a reduced carry over of infection. The majority of disease was inevitably in the western half of the country. The clinical symptoms were usually of milk drop and body condition loss. Concurrent scouring was not an invariable feature.

“Fluke areas” are now widespread and encompass most of the western half of the country. Further changes in epidemiology may be evident following reports of acute fasciolosis in sheep during December 2004. This may indicate infection persisting much later into winter, with

prolonged pasture infectivity having implications for the disease in cattle still at grass in November and December in the future.

## Bovine Virus Disease Virus

**Fig 8: All incidents of BVD in cattle in 1997 - 2004**



### “Acute BVDV”

Over the year there were thirty-eight occasions when acute BVD infection was diagnosed, usually by seroconversion. This may occasionally be coincident with a respiratory disease investigation but acute infection can exceptionally be responsible for widespread disease and production loss. For example:

In one herd 30/120 cows were affected by milk drop, pyrexia and anorexia. Blood samples taken from some of these animals confirmed seroconversion to BVDV. A number of cows in this herd were in early pregnancy so there may be cows carrying persistently

infected calves that will cause problems when they are born, but this will not be known for another 6-7 months.

### **“Mucosal disease” and “BVDV PI”**

There have been no significant changes in the numbers of these two diagnoses.

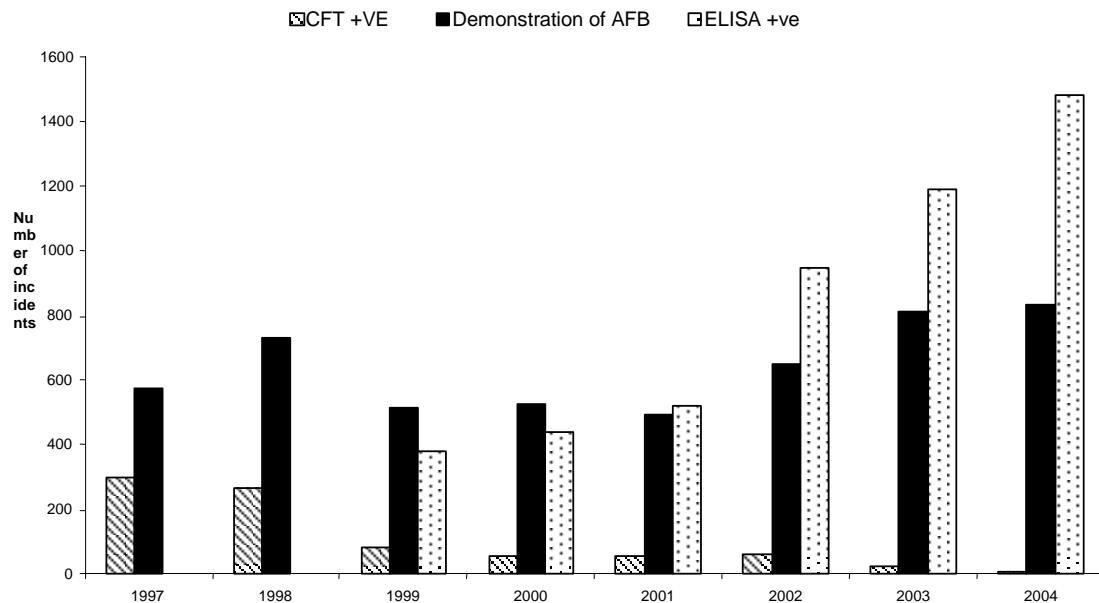
### **Type 2 BVD infection**

Another isolation of type 2 BVDV was made in April this year – from a nine-month-old animal with clinical signs of mucosal disease. The beef suckler herd was on a farm in South Wales only 3 km from a dairy farm of 80 milkers where type 2 BVDV had been isolated from a 14-month-old dairy heifer with signs of mucosal disease in 2003. On neither of these farms was there any suspicion of the acute and fatal haemorrhagic-type disease syndrome due to a type 2 BVD virus which caused problems in Canada and eastern USA in the early to mid 1990s. VLA monitors all BVDV antigen ELISA positive blood samples by PCR to detect the presence of type 2 virus. So far this virus has been found on four premises in the United Kingdom and was the subject of a letter to the Veterinary Record in February 2005. (Vet Rec (2005) **156**, 257-258).

### **Johne’s Disease**

The rise in the number of incidents of Johne’s disease recorded continues. However the increase in the number of diagnoses by “demonstration of typical acid-fast bacilli” has been a modest 2.6% whilst the increase in “ELISA positive” has been a staggering 24.8%.

**Fig 9: All incidents of Johne's Disease in cattle in GB 1997 - 2004**



This is further borne out by the number of blood samples processed per week for this test – when the test was introduced in 2000 there were 145 tests per month. By 2004 this figure had increased to 865 tests per month.

Disease was confirmed in animals imported from Europe. For example, a Jersey cow imported from Denmark presented with typical clinical signs and numerous acid-fast organisms were found in a sample of faeces.

The number of farms on which infection has been diagnosed has increased by 15% on last year (955 vs. 832 in 2003).

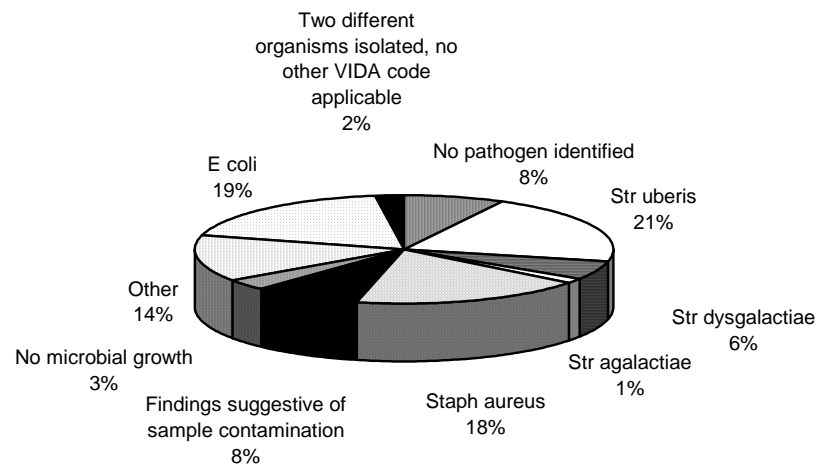
Nearly a quarter of farms that provided samples from which Johne's disease could be diagnosed were positive for that diagnosis.

Over the year members of VLA have conducted visits to a number of farms which reported the disease and have given advice and information about the disease and possible control measures.

## Mastitis

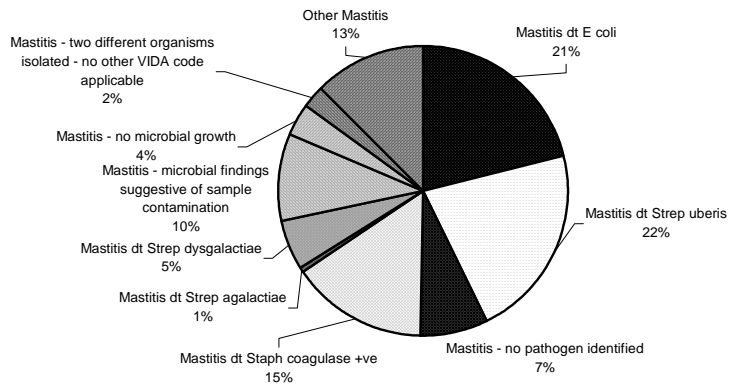
The relative proportions of mastitis diagnoses for all mastitis submissions during 2004 are shown in Figure 10.

**Figure 10: All incidents of mastitis in cattle in Great Britain as a percentage of total mastitis diagnoses in 2004 (n=5305)**

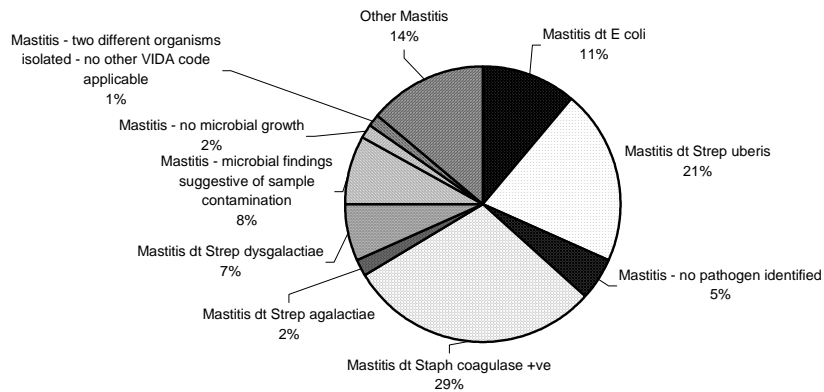


The relative proportions of VLA mastitis diagnoses for clinical and subclinical submissions respectively for 2004 are shown in Figures 11 and 12.

**Fig 11: Clinical mastitis in cattle in England and Wales by pathogen in 2004 (n = 3406)**



**Fig 12: Sub-clinical mastitis in cattle in England and Wales by pathogen in 2004 (n =747)**



Part-way through 2004, the VIDA diagnosis ‘mastitis – no pathogen identified’ was replaced by three new VIDA diagnoses: ‘mastitis – microbiological findings suggestive of sample contamination’; ‘mastitis –

no microbial growth'; 'mastitis – two different organisms isolated, no other VIDA code applicable'.

The new VIDA mastitis diagnoses improve the analysis of mastitis submissions for which no aetiological diagnosis is reached. Previously, the 'no pathogen identified' diagnosis included contaminated samples and culture negative (no microbial growth) samples.

### **Miscellaneous Conditions**

There has been little change in the number of dietary deficiencies since first recorded in 1999. The majority relate to energy deficient rations in dairy cows.

The number of cases of thyroid hyperplasia (Iodine Deficiency/Stillbirth) has risen in recent years. This possibly as a consequence of cost cutting and reduction in mineral supplementation provided to dry stock.

A similar number of lead poisoning incidents have occurred over the period. The sources were usually lead accumulator batteries, old paint or mining deposits.

### **Diagnosis Not Reached (DNR)**

Enhanced DNR analysis was developed in 2004, which enabled statistical comparison with the previous two years. In 2004, 61% of cattle submissions received for diagnostic purposes remained without diagnosis. This compared to 54% in the previous two years.

Categories where an increase was seen were alimentary, reproductive, respiratory and the systemic and miscellaneous category.

Numerically with the greatest number of DNR's, undiagnosed enteric disease increased significantly in 2004 to 58%, from 53% in the previous two years. Analysis however now allows comparison of the

extent of testing undertaken and only 19% remained undiagnosed after testing considered sufficient to achieve a diagnosis.

This analysis, designed to detect new and emerging disease, will in the future enable targeted DNR disease investigations and appropriate test developments.

## **SHEEP**

### **General**

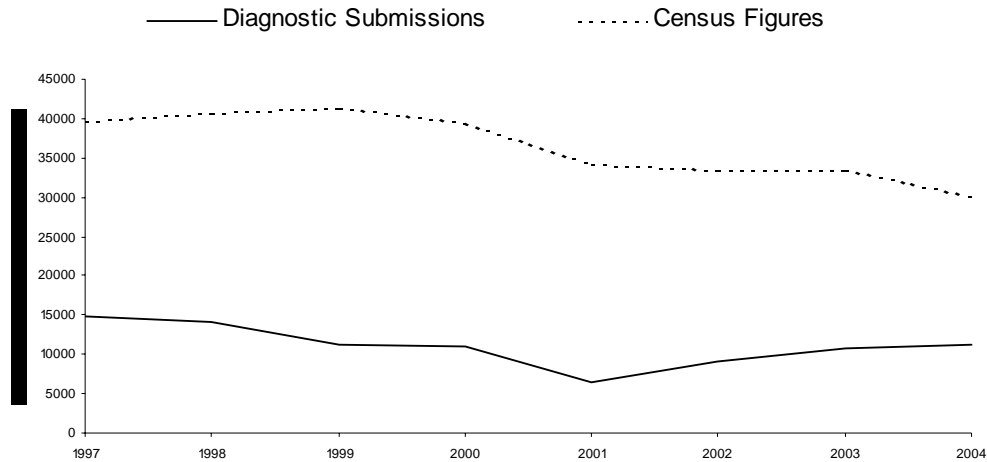
Excellent weather was experienced from the early spring until late autumn. This provided ideal conditions for lambing in most areas and a good start for growing lambs. However, the dry conditions experienced hampered finishing times in some areas. Wetter conditions returned later in the year. The south east of England received over twice the average rainfall in November and In December most areas experienced above average temperatures and rainfall.

Sheep prices were maintained throughout the year with finished lambs values around 10% higher than 2002. The year started with figures of around 250p/kg dw and peaked in mid-May at just under 350p/kg dead weight finishing the year at approximately 250p/kg dead weight. Cull ewes also showed an improvement on 2002 with values of around £37 obtained at the end of the year. The strength of the euro against the pound and only a modest recovery in the number of breeding ewes to around 16.5 million are likely contributory factors to the buoyant market.

### **Submissions**

The overall number of diagnostic submissions increased by approximately 17% to 10,728 compared with 9,165 in 2002. This welcome increase in submissions followed on from the increase seen in 2002 continuing the recovery post FMD.

Fig 13: VIDA sheep diagnostic submissions vs total GB sheep population 1997 - 2004



### Reproductive disease

Submissions of abortion material increased by approximately 14%, reflecting the general increase in submissions. A diagnosis was reached in approximately 54% of submissions, an increase compared with 2002 (50%). *Chlamydomphila abortus* remained the most commonly diagnosed cause of ovine abortion with 40% of diagnoses. This figure was slightly lower than in 2002 (44%). *Toxoplasma* (25%) and *Campylobacter* (14%) continued as the second and third most common diagnoses recorded. Twenty-four incidents of foetopathy were associated with *Salmonella* Dublin infection, a reduction compared with 2002 (29 incidents). The number of incidents recorded in the category 'foetopathy due to other *Salmonella* serotypes' increased this year and was due principally to an increase in the number of incidents associated with *Salmonella diarizonae* and *Salmonella* Montevideo.

### Respiratory Disease

There were 13 incidents of Maedi-Visna (MV) infection, the highest figure recorded on VIDA since 1983. The typical presentation in cases of MV infection is respiratory disease, with nervous signs of visna rarely

recorded in Great Britain and usually only seen in heavily infected flocks. The year was unusual when at the end of 2003 multiple cases presenting as primary neurological disease (visna) were confirmed in two flocks. MV virus infection is likely to be much more widespread in the UK sheep population (particularly commercial cross - bred flocks obtaining breeding replacements from markets) than reports of clinical disease suggest. Most infection is subclinical and overt disease not usually evident until within - flock seroprevalence exceeds about 60 percent.

Sporadic cases of ovine pulmonary adenocarcinoma (OPA) were diagnosed during 2003 and the number of diagnoses was largely unchanged from previous years. As with MV, much of the disease is unrecognised and farmer awareness is generally low.

The number of diagnoses of pneumonia due to *Mannheimia* (formerly *Pasteurella*) *haemolytica* was the highest since 1997. The number of recorded incidents was around 70% higher than 2002. The cause of this is unclear, but could be due to reduced vaccine usage and changing weather conditions in the autumn.

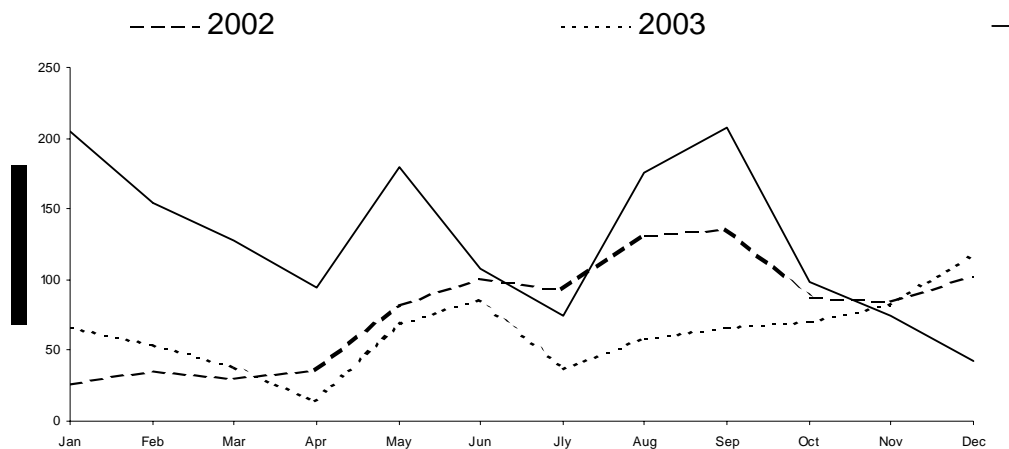
### **Alimentary disease**

The number of diagnoses of acute fasciolosis in sheep in 2003 was much less than seen in the previous four years. This was due to the prolonged dry weather in the summer through to November. This dryness had a detrimental effect on the transmission of infection and also the viability of the snail intermediate host. The number of black disease incidents, caused by *Clostridium novyi*, and usually associated with migrating immature fluke, was also reduced (14 incidents in 2003 compared to 27 in 2002). In contrast chronic fasciolosis was diagnosed more commonly than in 2002. Cases of chronic fasciolosis were likely

to occur in 2003 for a number of reasons. These include (a) the continuation of infestation from the winter of 2002-2003, (b) the maintenance of parasite and the intermediate host in localised wet areas in 2003, which were more likely to have been grazed by sheep in the drier weather and (c) the smaller numbers of metacercariae infecting sheep in endemic areas causing chronic liver damage, rather than larger numbers causing massive liver destruction and death as seen in acute fasciolosis.

Parasitic gastro-enteritis (PGE) continues to be a common diagnosis with more incidents recorded in 2003 than the previous year. The dry weather in the summer led to a reduction in diagnoses during July. However, disease was then seen commonly through to the end of the year. This has been a consistent feature over the last few years with the continuation of PGE through mild, wet autumn and winter periods.

**Fig 15: All incidents of PGE - including haemonchosis, nematodiriasis and not otherwise specified in sheep 2002 - 2004**



*Nematodirus battus* was a major problem in May and June. The classical trigger for nematodiriasis of a cold spell followed by warm weather did not precede this disease outbreak. The trigger for the mass

hatch of larvae may have been wet weather in May following dry weather in late spring. There was no evidence of a large number of incidents of autumn nematodiosis following the problems in the spring.

Lamb dysentery and pulpy kidney disease (PKD) were again identified in unvaccinated flocks. Typical PKD does also seem to have been seen unusually commonly in very young lambs (1-2 days old upwards).

### **Miscellaneous conditions**

Diagnoses of systemic disease due to *Salmonella* Typhimurium DT 104 remained at a low level following the epidemic, which peaked in the mid 1990s. In contrast the number of diagnoses of systemic disease due to *Salmonella* Dublin showed an increase compared with 2002.

Listeriosis was confirmed on 107 occasions as a cause of encephalitis compared with 78 incidents in 2002. Clamp silage, bagged or wrapped silage, haylage, big round bale hay and normal hay bales were all reported respectively as the forage source in outbreaks, demonstrating that the disease is not just associated with big baled silage.

Tick-borne or associated diseases were reported by several centres, with many areas anecdotally reporting the emergence of large numbers of ticks this spring. Forty-five incidents of Louping ill were recorded, the largest number recorded on VIDA since 1995. Some of these outbreaks were described as severe causing significant losses.

Copper poisoning was diagnosed on 77 occasions, an increase of approximately 50% on the number in 2002 and the highest number of incidents recorded since 1998. Sheep are particularly susceptible to copper toxicity and disease is often associated with prolonged feeding

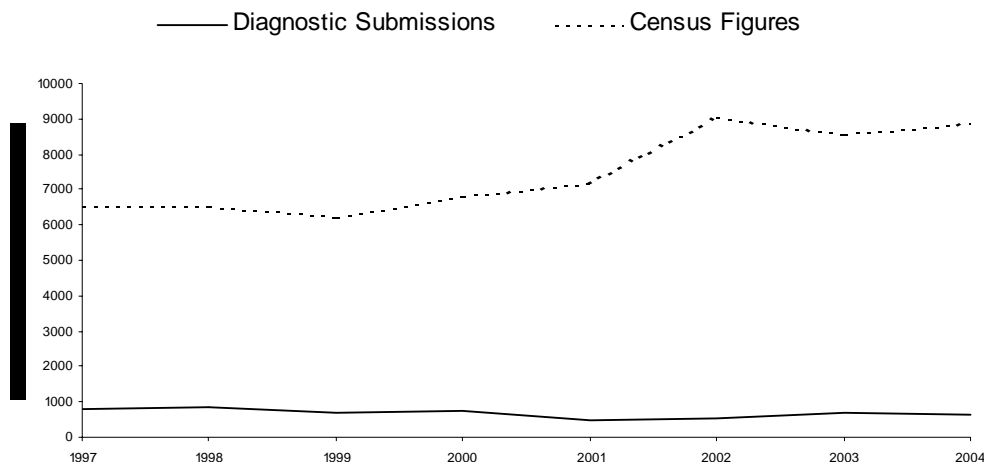
of concentrate feed rather than gaining access to extraneous sources of copper.

The number of incidents of ectoparasitic disease recorded on VIDA is likely to represent a significant underestimate of disease prevalence, as a diagnosis is often not sought prior to treatment. Although sheep scab (*Psoroptes ovis*) remains the most common diagnosis, other ectoparasitic diseases (predominantly louse infestation) accounted for 24% of diagnoses. As some licensed products are not effective against both sheep scab and louse infestation it is clearly important that a diagnosis is sought when these products are used.

## GOATS

There were 1110 submissions in total during 2004, comprising of 630 “diagnostic” submissions (57% of all goat submissions), 193 “screening” submissions and 287 “diagnosis n/a” submissions.

Fig 16: Goat diagnostic submissions vs total goat population in Great Britain  
1997 - 2004



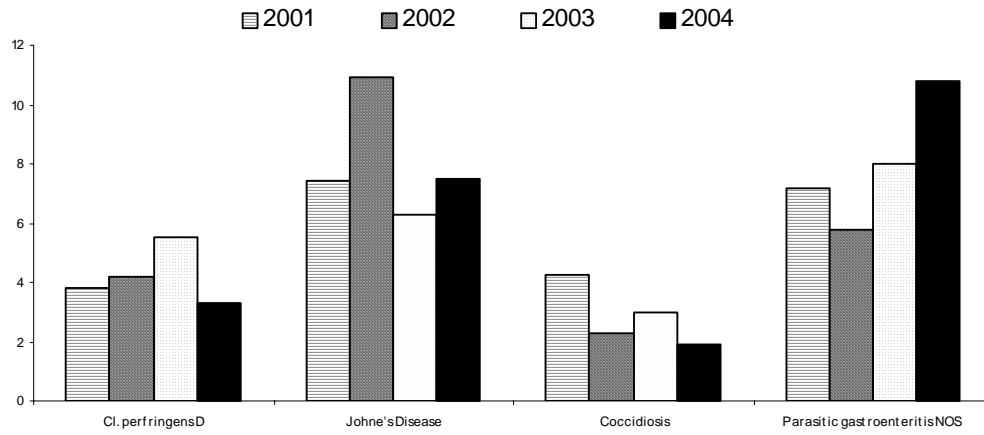
Of the diagnostic submissions, a total of 281 VIDA listed diagnoses were made (note: a few submissions had two or more VIDA diagnostic codes). A further 29 VIDA non listed diagnoses were made – the majority (41%) of these were related to skin disease.

Of the listed VIDA diagnoses, 208 (71%) were made from two disease classifications; disease of the digestive system and systemic disease and those not readily classified organically.

There were 171 diagnoses recorded as diseases of the digestive system (59% of all listed diagnoses), of which the top five were: PGE (67 diagnoses, 39%); Johne’s Disease AFB’s (46 diagnoses, 27%); *C. perfringens* Type D (21 diagnoses, 12%); Coccidiosis (12 diagnoses, 7%) and, Chronic fasciolosis (8 diagnoses, 7%).

The “top 5” digestive disease diagnoses are the same as 2003 and similar to years before that, however there were more diagnoses of PGE last year than in previous years.

**Fig 17: All incidents in goats in Great Britain as a percentage of total diagnostic submissions 2001 - 2004**



**Diagnosis not reached**

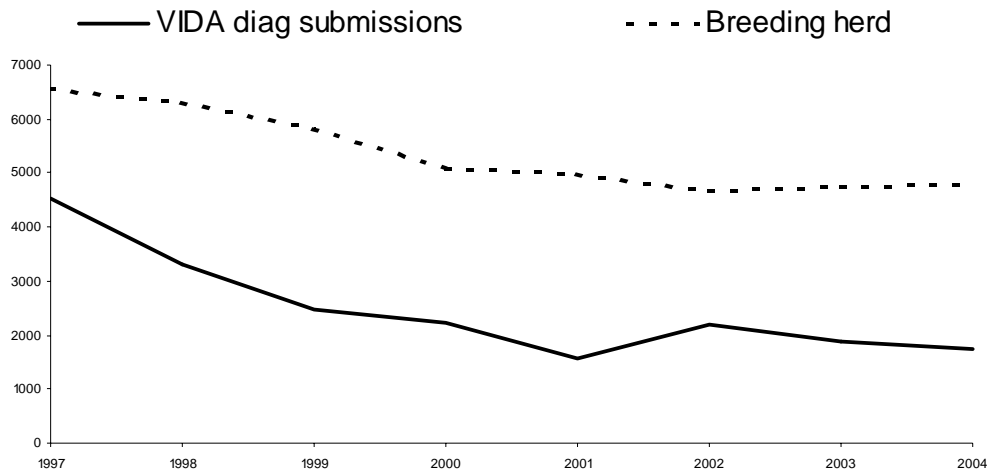
For 345 “diagnosable” submissions, no diagnosis was reached. Again, the majority of these were from digestive disease (129 submissions, 37%) and systemic disease (82 submissions, 24%).

## PIGS

### General

The national breeding herd for England and Wales stabilised with a slight increase to 101% of last year's population. Breeding pig numbers have declined by 27% since 1997. The number of holdings with breeding pigs has shown a steady decline to 59% of the number at 1997 with herd size increasing by 8.5%.

Fig 18: VIDA diagnostic pig submissions vs pig breeding herd 1997 - 2004



### Reproductive Disease

The foetopathy diagnostic rate is always low and has ranged from 20% to 47% in the last seven years and was at 23% this year. Although this is comparable to the diagnostic rate in cattle the submission numbers for pig reproductive disease are much lower and therefore meaningful epidemiological analysis of VIDA data and disease trends is difficult. Diagnostic techniques for investigation of porcine subfertility and foetopathy have improved with molecular tests now available for *Leptospira* species, porcine reproductive and respiratory syndrome virus (PRRSv) and porcine parvovirus. These tests, although suitable for dam and foetal tissues, are unlikely to increase the foetopathy

diagnostic rate as a high proportion of pig reproductive submissions have a non-infectious aetiology. *Haemophilus parasuis* was isolated in incidents of polyserositis with scrotal swelling.

### Respiratory Disease

Respiratory disease was diagnosed in 13.4% of diagnostic submissions (2003- 17.1%, 2002- 15.9%, 2001- 19.8%). It is important to note that these VIDA figures exclude PRRSv and porcine circovirus 2 (PCV2) associated respiratory disease. Disease associated with *Pasteurella multocida* was the commonest diagnosis (25%). This apparent importance may simply reflect the relative ease of isolating or identifying pasteurellas compared with other porcine respiratory pathogens. Continuing surveillance of influenza virus isolates has not identified significant changes in circulating strains.

Swine influenza isolates obtained in 2004:

	Received	Positive (%)
Submissions	110	7*(6.4%)
Samples	258	10 (3.9%)

\* avian-like swine H1N1 x 5, H1N2 x 2

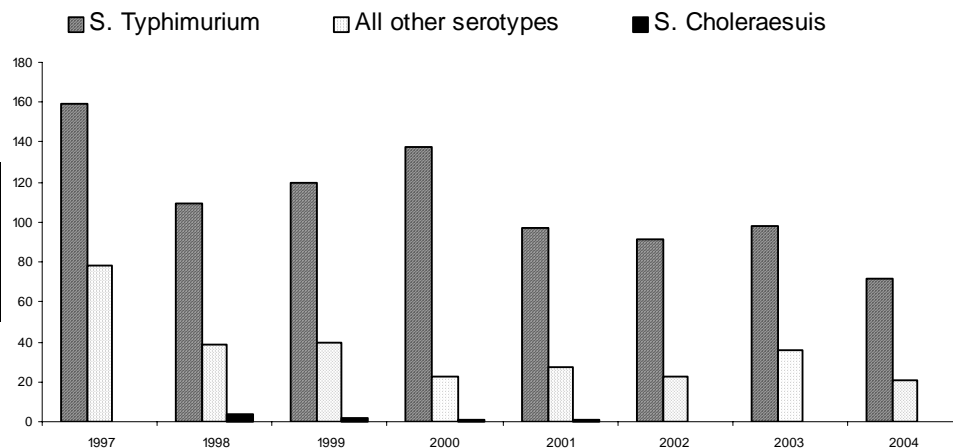
The rate of diagnoses of swine influenza remained around the 1.5 percent of relevant submissions (0.5% for 2004) over the last six years. The percentage of diagnoses of PRRS has stabilised over the last three years although the low rate (1.3% of diagnostic submissions) is partly due to difficulties in attributing clinical disease unequivocally to PRRSv infection, rather than to a real decline in the clinical importance of the syndrome. The increased use of virus isolation and PCR on fresh tissues and immunohistochemistry on fixed tissues may increase

future diagnoses of PRRS. A variant of the PRRS European genotype was isolated from finisher pigs with severe respiratory disease.

### Alimentary Disease

Enteropathies were recorded in 17.9% of diagnostic submissions (2003-14.3%, 2002-14.5%). Colibacillosis was the commonest diagnosis with enterotoxigenic *Escherichia coli* (ETEC, mainly serotypes O149:K91,K88ac 'Abbotstown', O45ac:K'E65,K88ac 'G4/66', and O147:K89,K88ac 'G1253') predominantly causing scour and mortality in weaners. Neonatal outbreaks were less frequent, probably a reflection of better control through sow vaccination and farrowing-house hygiene. Diagnoses of swine dysentery at 2.4% of diagnostic submissions was low compared to the late 1990s.

Fig 19: All incidents of *Salmonella* Typhimurium and *Salmonella* Choleraesuis in pigs 1997 -2004



For salmonellosis there was a statistically significant fall from the figures for 2000 and 2001. The number of incidents of *Salmonella* Typhimurium decreased to 71 (2003- 98). These figures are mainly for herds where there is clinical salmonellosis rather than subclinical infections. *S. Typhimurium* U288 was the most common definitive type

(DT) recorded from pigs for the third year running. Other commonly recorded DTs were 193 and 104. Visits to Zoonoses Action Plan (ZAP see <http://www.bpex.org/zap/default.asp> ) category 2 and 3 farms will increase the identification of subclinically infected herds.

### **Other conditions**

In 2004 the percentage of PMWS diagnoses from relevant diagnostic submissions was the lowest since the peak of 2001 and 2002 following the first confirmed British diagnosis in July 1999. The importance of postweaning multisystemic wasting syndrome (PMWS) and porcine dermatitis and nephropathy syndrome (PDNS) in growers and finishers has not diminished. PMWS was diagnosed in 8.2% of diagnostic submissions and PDNS in 2.2%. Outbreaks often occurring as part of the porcine respiratory disease complex which is increasingly reported as a cause of high mortality.

## **BIRDS**

### **General**

With commercial layer and broiler census populations in Great Britain increasing by approximately 1% each in 2004, these industry sectors showed sustained stability and cautious optimism, particularly in the second half of the year. However, broiler parent chick placings showed a marked reduction during the course of 2004. There was little change in the continuing contraction of the commercial turkey sector compared with 2003. The rising trend in poultry meat imports continued unabated, most notably in the third and last quarters of the year.

During 2004 the spread of the epizootic of Highly Pathogenic Avian Influenza (HPAI) intensified across the Far East. By August 2004, ten Asian countries had reported outbreaks of HPAI due to H5N1 influenza viruses to the OIE. Thailand and Vietnam were particularly severely affected, with widespread disease in poultry and fatal cases of human infection. The continuing spread of HPAI and the threats posed to both human health and the global poultry industry caused significant concern.

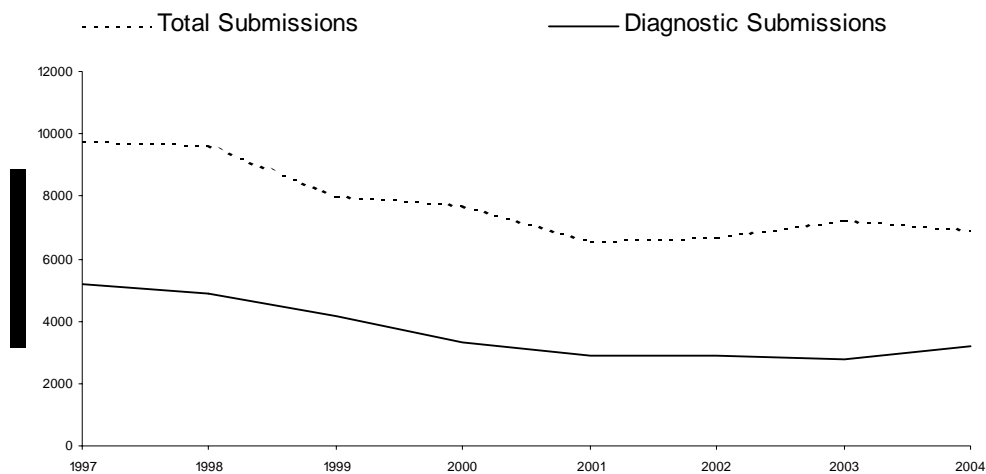
Following the steady rise in cereal prices experienced during 2003, to in excess of £100/tonne for feed wheat, prices settled back during the second half of 2004 to around the £60/tonne mark. This provided some welcome relief for the commercial sectors of the industry. However, some broiler integrators felt the repercussions of cost-cutting measures in response to high feed wheat prices. Vaccination schedules had been altered and the disease and economic impacts of reduced flock protection to viral challenge were felt during the course of 2004.

## Submissions

The downward trend in the total number of diagnostic submissions for birds (all sample types and species) was reversed in 2004, with an increase of some 14% over 2003. This included a marked increase in the total number of diagnostic domestic fowl submissions of 25.7% in 2004 compared with the previous year, bringing the total number of poultry diagnostic submissions near to the levels seen in 1999.

Economic conditions in the commercial poultry production sectors are likely to have contributed to the observed increase in diagnostic submission rates.

Fig 20: Total bird submissions in GB 1997 - 2004

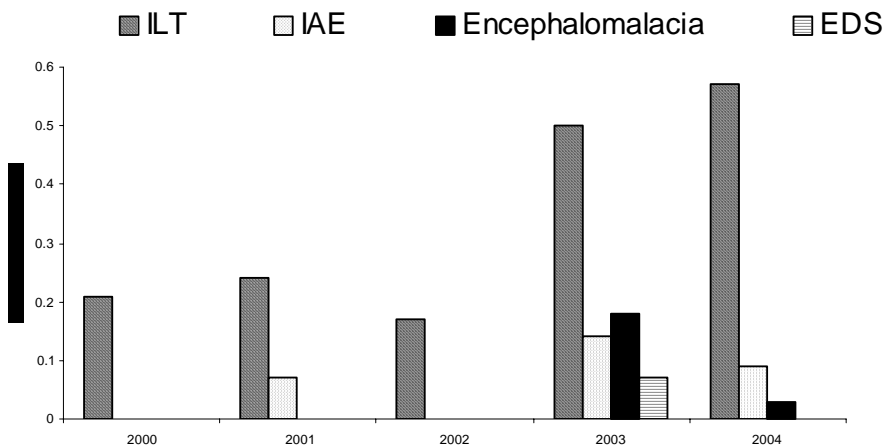


It is also recognised that submissions from smaller commercial producers, including free-range poultry, backyard and hobby flocks and game birds dominate VIDA data, providing both a snapshot and trends of poultry disease. The expansion in numbers of free-range commercial, backyard and hobby flocks nationally continued in 2004, which is also likely to be reflected in the increased submission rates observed.

## Domestic Poultry Disease Trends

The upward trend in enzootic viral poultry diseases seen since the year 2000 was largely unaltered in 2004 (see figure y). An increase in the number of diagnoses of Infectious Laryngotracheitis (ILT) in 2004 compared with 2003, continued the upward trend of VIDA incidents. ILT outbreaks were once again predominately recorded in smaller, unvaccinated backyard flocks and free-range chickens, which suggests that ILT is becoming more ubiquitous in these types of poultry systems.

Fig 21: All incidents in birds in Great Britain as a percentage of diagnostic bird submissions 2000 - 2004



The number of diagnosed incidents of Infectious bronchitis (IB) was of a similar level to recent years. Disease in flocks was attributed to IB virus (IBV) and perhaps of greater significance, variant strains of Infectious Bronchitis virus. Several strains of the latter were analysed by molecular methods (PCR and sequencing) during 2004 and shown to be similar to the Italy 02 genotype, which is now widespread in Europe. This variant was also isolated from a broiler breeder flock that suffered a severe egg drop coincident with chick hatchability and feather dystrophy problems.

In the commercial broiler sector, field IB serological monitoring indicated

an increased prevalence of variant IBV challenge, including Italy 02, associated with sub-optimal productivity and disease. Health and production problems in the free-range commercial layer sector during 2004 have also seen IB frequently implicated. Field evidence suggests that vaccination of free-range flocks in-lay for IBV and variant IBV is now commonly undertaken.

VIDA incidents of Marek's disease have continued to increase in 2004 with disease recorded in breeders, layers, broilers (predominantly transient paralytic "floppy broiler syndrome") as well as backyard and hobby flocks.

An increased number of diagnosed outbreaks of Gumboro/Infectious Bursal Disease (IBD) were seen in 2004 compared with the previous three years. The majority of IBD incidents recorded by VIDA have occurred in the broiler sectors. Field evidence indicated that due to the IBD-related health and productivity problems experienced in the broiler sector, a proportion of growers have used "hot" vaccines for the control of IBD.

Aside from the immediate flock disease problems posed by Marek's disease and IBD, these infections present the additional hazard of immuno-suppression with the consequent risk of increased predisposition to inter-current infections, flock health challenges and economic losses.

The importance of control of the major viral disease of commercial domestic poultry by use of appropriate vaccination schedules and biosecurity cannot be under-estimated. The epidemiology of circulating viral infections must also consider the role played by other, small free-range, backyard or hobby flocks and wild bird populations, where

vaccination may either not be economically viable or is impractical. Such birds present additional flock biosecurity challenges and may act as sentinels or reservoirs for infections.

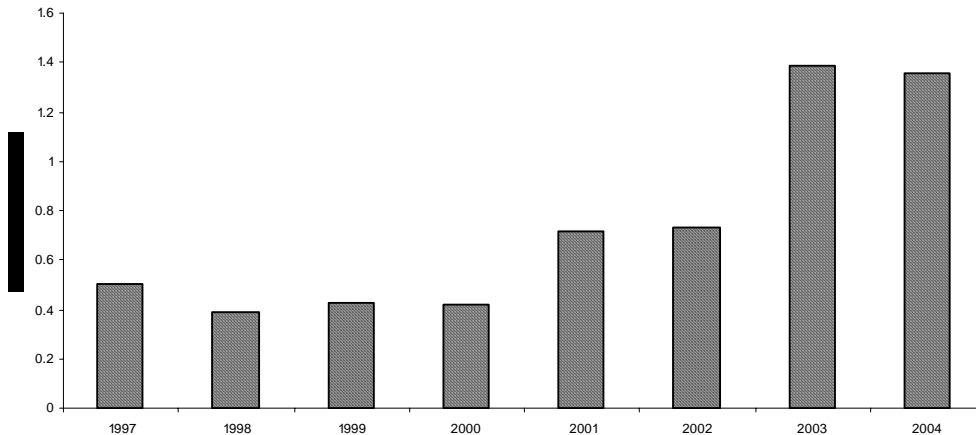
VIDA diagnoses of mycoplasmosis were frequent in 2004. An increase in the number of incidents of *Mycoplasma synoviae* (Ms) infection in poultry was seen, with the highest number of documented episodes since 1997. In the majority of cases, diagnoses of inter-current disease were made with serological evidence of Ms infection recorded. The number of diagnoses of disease due to *Mycoplasma gallisepticum* (Mg) in commercial poultry and game birds was reduced in 2004 compared with the previous two years. However, field reports indicated that an increased prevalence of *Mycoplasma gallisepticum* infection in free-range layers was observed. *Mycoplasma meleagridis* (Mm) was diagnosed once in 2004 in turkeys. Prior to 2003, no Mm incidents had been recorded by VIDA since 1996.

The recorded prevalence of the common bacterial diseases of poultry by VIDA during 2004 has remained relatively unchanged. The familiar autumn seasonality of certain bacterial diseases, for example, erysipelas in turkeys reflected previous years. Field evidence also indicated erysipelas to be a significant cause of mortality in free-range layers during 2004. A decrease in the number of diagnoses of *Pasteurella multocida*/ Fowl cholera was recorded.

The numbers of *Salmonella* diagnoses indicates that control of *Salmonella* Enteritidis and *Salmonella* Typhimurium is being maintained. Variations in prevalence do exist between the different commercial production sectors. During the last quarter of 2004 the EU Laying Hen survey commenced, the results of which are not included in VIDA data.

In 2004, the overall number of diagnosed incidents of blackhead (histomoniasis) recorded by VIDA was similar to that seen during 2003.

**Fig 22: All incidents of blackhead as a percentage of diagnostic bird submissions in Great Britain 1997 - 2004**



Blackhead (histomoniasis) in turkeys was diagnosed regularly in 2004, albeit at a reduced frequency compared with 2003. The seasonal trend seen in previous years continued with a significant proportion of disease incidents affecting smaller turkey flocks producing for the Christmas market. During 2004, blackhead in turkeys did not appear to develop into a problem of the magnitude feared by some following the withdrawal of previously licensed chemo-prophylactic medications.

In contrast during 2004 there was a noticeable increase in the numbers of diagnoses of blackhead in chickens, particularly free-range layers, continuing the progressive increase in prevalence seen over the last four years. Diagnoses have been made throughout the year with no clear seasonality.

The seasonal pattern of familiar game bird diagnoses was repeated this year from May to September, reflecting the breeding and rearing

periods. Mild but wet weather prevailed in most parts of Great Britain during the spring months. The early summer brought generally warm and dry conditions, benefiting the game bird rearing season on the field. Changeable, wetter weather was experienced as the summer progressed with consequent problems experienced in release pens. A warm, dry and sunny early autumn gave way to widespread rain and cooler conditions. Whilst the overall numbers of protozoal enteropathy diagnoses in 2004 continued the static trend of the last five years, a decrease in diagnoses of motile protozoal enteropathy was seen in the game sector. VIDA data therefore suggests that, despite the reduction in the availability of dimetridazole, gamekeepers and their veterinary advisers have improved their techniques for controlling these diseases. Conversely, an increase in coccidiosis diagnoses was recorded.

Seasonal diagnostic trends of rotavirus infection of chicks and poults and nephrosis due to coronavirus in adult game bird breeding stock continued as in previous years. Separate incidents of Marble Spleen Disease in pheasants were diagnosed in September and October this year, the first diagnoses of this condition since 1999.

An increased number of diagnoses of Duck Viral Enteritis (DVE or duck plague) were seen in 2004, with the highest number of recorded incidents since 1997. The strong seasonal pattern of DVE outbreaks, typically associated with naïve waterfowl coming into contact with migratory birds, remained unchanged. VIDA cases of DVE were recorded from March to July, with peak prevalence in July.

### **Trends In Emerging Diseases**

A number of emerging and re-emerging poultry health incidents and those of uncertain or multifactorial aetiology were identified during

2004, which are commonly listed in the Diagnosis not listed (DNL) or diagnosis not reached (DNR) categories of VIDA data.

One such health problem is “Clubbed down” in chicks. Since 1997 outbreaks of this syndrome have occurred in different parts of the country resulting in poor hatchability and heavy culling in neonatal chicks. Adenoviruses and Infectious Bronchitis viruses have been isolated from parent flocks, embryos and chicks with clubbed down, but their role is still unclear.

There is evidence of new disease agents emerging including astrovirus-like particles in turkey poults. The involvement of viruses has long been suspected in cases of enteropathy in turkeys and it may be that we are now seeing cases of viral enteritis and stunting in turkeys in this country, which may warrant further investigation.

Investigations of laying flocks have been carried out where Avian Intestinal Spirochaetosis has been implicated, possibly reflecting a greater awareness of this disease.

During 2004 goose parvovirus (GPV) or Derzsy's Disease was confirmed on four premises in England, Scotland and Wales from May to July. This represents the first isolation of GPV in Great Britain since 1981, when it was introduced in imported eggs. The disease is characterised by high mortality and morbidity in goslings and Muscovy ducklings less than 6 weeks of age. Although the original source of the outbreak was not identified, anecdotal evidence implicated wild geese. Phylogenetic analysis of two of the Great Britain isolates showed that the viruses to have a high degree of homology to GPV strains isolated in northern Europe during 2004.

Cases in turkeys of airsacculitis accompanied by neurological signs were recorded during the second half of 2004, reflecting a pattern of disease seen in 2003. The clinical presentation in a number of these cases lead initially to suspicion of notifiable disease, which was ruled out following virological testing. In one such affected flock, *Mycoplasma gallisepticum* (Mg) was identified by molecular methods from poult with Infectious sinusitis-like clinical signs. Mg has previously been associated with meningoencephalitis in turkeys in the United States.

## **MISCELLANEOUS**

Miscellaneous species include camelids, deer, buffalo, bison, horses, dogs, cats, animals from zoological collections and wildlife. Total diagnostic submissions for miscellaneous species rose by 23% to 16,537 submissions received.

The most frequently recorded species were dogs, cats, and horses, mules and donkeys. VLA has largely withdrawn from diagnostic work in companion animal species apart from when zoonoses are suspected and some contract work. The diagnostic work on companion animals recorded is virtually all carried out by Scottish Agricultural Colleges.

Diagnostic submissions from deer remained static compared with 2003 and comprised less than one per cent of diagnostic submissions from miscellaneous species.

## **TABULATED DATA**

As well as the information published in the annual VIDA book, there is a customised data retrieval service from the extensive VIDA database. Information can be retrieved for any number of years from 1975 to the current year, for cattle, sheep, pigs, birds, goats, horses, rabbits, fish, dogs and cats, and since 1990 for deer and badgers. Birds can be classified into a large number of different categories. Other variables include age, diagnosis from a specific sample type, and county of origin.

Further details of customised ad hoc retrievals, including a cost quotation are available from:

VIDA Section  
Centre for Epidemiology and Risk Analysis  
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