Laboratory submissions from adult cattle "found dead" in England and Wales, 2004

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INTRODUCTION

Veterinary surveillance is important in the control of endemic disease and the identification of emerging syndromes. **Veterinary laboratories** provide the referring practitioner, and farmer, with a diagnostic capability and supply data for national surveillance programmes. The Veterinary Laboratories Agency has a network of 14 Regional Laboratories (RL) and 2 Surveillance Centres providing post mortem and diagnostic facilities across England and Wales. This poster presents the findings from an analysis of laboratory submissions. It considers factors affecting submissions, the value of different sample types and the diagnoses reached.

MATERIALS AND METHODS

Epidemiological data is collected from the **submission form** and held on "FarmFile".

Some forms provide a lot, and some provide little!

FarmFile was searched for all diagnostic submissions from adult (≥ 24 months of age) cattle with a main presenting sign of "FINDDEAD" (no prior observation of clinical signs).

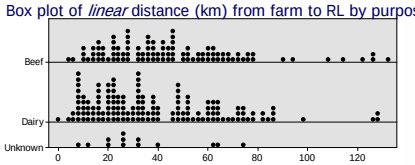
Data field	Number of cases where data field complete (%)			
	All submissions (n=253)	Dairy (n=142)	Beef (n=98)	Unknown (n=13)
Age detail	189 (74.7)	109 (76.8)	67 (68.4)	13 (100)
Sex	245 (96.8)	139 (97.9)	95 (96.9)	11 (84.6)
Breed	211 (83.4)	122 (85.9)	82 (83.7)	7 (53.8)
Herd size	173 (68.4)	92 (64.8)	76 (77.6)	5 (38.5)
Husbandry (housing)	210 (83.0)	112 (78.9)	94 (95.9)	4 (30.8)
Number affected dead	191 (75.5)	107 (75.4)	80 (81.6)	4 (30.8)
Date of sample collection	217 (85.8)	122 (85.9)	88 (89.8)	7 (53.8)

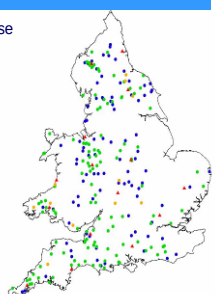
There were **253 submissions**, 142 from dairy herds and 98 from beef herds.

RESULTS

Distance from farm to laboratory

Box plot of *linear* distance (km) from farm to RL by purpose





- Fewer (p=0.032, OR=0.40) beef (v dairy), carcases were received from holdings 41-80km from the RL.
- However, where more than one death had occurred in the incident, there was a significant (p<0.005) increase in the mean distance for the submission of beef carcases (from 20.6 to 46.8km).

Sample type

- 54% of submissions were carcases and 46% were non-carcase submissions (9% "internal", 27% eye fluid and 10% "external".
- Fewer carcase (p=0.013, OR=0.52) and more eye fluid (p=0.002, OR=1.83) samples were received from beef compared to dairy holdings.
- More carcase (p=0.038, OR =1.83) and fewer eye fluid (p=0.003, OR=0.38) samples from incidents with >1 death.

Time from sampling to receipt

- 71% of dairy and 74% of beef carcases were received on the day of death. The maximum time for carcase receipt was 2 days.
- Non-carcase submissions had a greater time range of 1-6 days.

Diagnosis

- Overall, a diagnosis was reached in 48% of submissions. For carcase submissions, a diagnosis was reached in 74% of cases. "Limited" testing (v "reasonable") was greater on non-carcase submissions (p=0.001, OR 25.4). A diagnosis was reached from 85% of all submissions where reasonable testing completed.
- Fewer diagnoses were reached from carcases received 1 day or more after death (p=0.036, OR=0.38).

Table of diagnoses

Disease system	Listed Diagnoses	Number of diagnoses (%)		
		All (n=133)	Dairy (n=77)	Beef (n=46)
Systemic	All	66 (49.6)	27 (35.0)	34 (73.9)
	Hypomagnesaemia	30	6	52.2
	Clostridium novyi disease	11	4	8.7
	Trauma/fracture	6	5	2.2
	Clostridial disease (excl. C. chauvoei, novyi, septicum & perfringens)	3	1	4.3
Digestive	All	22 (16.5)	13 (16.9)	6 (13.0)
	Traumatic reticuloperitonitis	6	6	0
	Intestinal torsion	6	3	4.3
	Fasciolosis	5	2	6.5
	Acidosis	1	0	2.2
Respiratory	All	6 (4.5)	5 (6.5)	0
	Pneumonia due to Mannheimia haemolytica	4	4	0
Reproductive & mammary	All	6 (4.5)	5 (6.5)	1 (2.2)
	Metritis	3	2	2.2
	Mastitis due to E.coli	2	2	0
Urinary	All	2 (1.5)	1 (1.3)	1 (2.2)
	Nephritis	1	1	0
	Pyelonephritis due to Corynebacterium renale	1	0	2.2
Nervous	All	1 (0.8)	0	1 (2.2)
	Listeria encephalitis	1	0	2.2
	Non-listed diagnoses			
All		30 (22.6)	26 (33.8)	3 (6.5)
Systemic	Abdominal haemorrhage, caudal vena cava thrombosis, fatty liver	9	6	3
Digestive	Oesophageal obstruction, abomasal torsion, abomasal volvulus, abomasal abscess	7	7	0
Circulatory	Aortic aneurysm, fatal haemorrhage aorta, fatal haemorrhage caudal vena cava	6	6	0
Reproductive	Uterine rupture, uterine torsion, toxic mastitis	5	5	0

DISCUSSION

- **Surveillance depends upon on the submission of representative material**. These findings suggest purpose (beef v dairy), distance from farm to laboratory and the number of deaths in the incident to be apparent biases**.**
- **Unusual, or sporadic events (haemorrhage or torsions) were more likely to be diagnosed in dairy cattle than beef**. Is this representative of the population? Is the presentation of a novel "sudden death" more likely to be investigated in a dairy herd? The use of population based denominators may help estimate the representation and coverage of laboratory submissions.
- **The value of laboratory investigation to the farmer depends on the probability of reaching a diagnosis**. This is influenced by sample type (carcase v other), level of testing (reasonable v limited) and the time from sampling to receipt.
- **To maximise the value from laboratory investigations from adult cattle "found dead", the submission of a carcase within 1 day will give the best probability of reaching a diagnosis.** This is of greatest benefit for the farmer, practitioner and for surveillance.

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