Animal & Plant Health Agency

SRUC

GB miscellaneous & exotic farmed species quarterly report

Disease surveillance and emerging threats

Volume 27: Q4 –October-December 2020

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Editor: Alan Wight, APHA Starcross
Phone: + 44 (0)3000 600020
Email: Alan.Wight@apha.gov.uk

Introduction and overview

This quarterly report reviews disease trends and disease threats for the fourth quarter, October-December 2020, and Annual submission figures for January-December 2020. It contains analyses carried out on disease data gathered from APHA, SRUC Veterinary Services division of Scotland's Rural College (SRUC) and partner post mortem providers and intelligence gathered through the Small Ruminant Species Expert Group networks. In addition, links to other sources of information including reports from other parts of the APH A and Defra agencies are included. A full explanation of how data is analysed is provided in the annexe available on GOV.UK
https://www.gov.uk/government/publications/information-on-data-analysis

Issues & Trends

New Post-Mortem Providers join APHA's Scanning Surveillance Network in England and Wales

The APHA's post-mortem examination and diagnostic testing service provides a major component of the GB scanning surveillance network. The network works closely with vets and farmers to detect and investigate new or re-emerging disease, and diagnose endemic diseases in farm animals.

The APHA Surveillance Intelligence Unit and Surveillance and Laboratory Services Department are very pleased to announce that during January and February 2021, three additional post-mortem examination (PME) providers have joined the scanning surveillance network. These are the Universities of Cambridge, Liverpool and Nottingham.

This broadens the expertise of, and contributors to, livestock disease surveillance in England and Wales and also brings livestock premises in the areas they cover closer to a post-mortem provider.

The new PME providers join the seven current PME Providers (Royal Veterinary College, Universities of Surrey, Bristol, Cambridge and Liverpool, the Wales Veterinary Science Centre, and SRUC Veterinary Services St Boswells) that work together with the six APHA Veterinary Investigation Centres, all of which will continue their valued contribution to scanning surveillance.

Key points about accessing PME in APHA's scanning surveillance network:

- Each PME Provider has an assigned area as shown in colour on the map on this link: http://apha.defra.gov.uk/documents/surveillance/maps/england-wales-map20.pdf
- Within each assigned area, the hatched area shows where premises are eligible for free carcase collection and delivery of animals to the PME Provider
- Premises within non-hatched areas need to arrange to deliver animals themselves

- The postcode search tool identifies and provides contact details for the allocated PME provider and indicates if the premises is eligible for free carcase collection. This is based on the postcode of the premises from where an animal is to be submitted rather than a veterinary practice: http://apha.defra.gov.uk/postcode/pme.asp
- To arrange a PME, the vet calls the relevant PME provider to speak to the duty VIO/vet
- There will be some livestock premises for which the allocated PME provider has changed, and the free carcase collection service may no longer be provided for some holdings. The APHA postcode search tool allows farmers and vets to see the situation for individual premises.

More information about APHA's scanning surveillance and diagnostic services is available on Vet Gateway (link) below and in the attached farmer and vet information leaflets which include a map showing the PME sites.

http://apha.defra.gov.uk/vet-gateway/surveillance/index.htm

Please do let me know if you have queries which are not addressed in this communication, or contact the APHA Surveillance Intelligence Unit SIU@apha.gov.uk for more information.

Number of diagnostic submissions in Quarter 4 (October-December) for alpacas, llamas and farmed deer (Table 1 and Figure 1) – the APHA figures include submissions to partner post mortem providers (PPP). Other miscellaneous and exotic species may also be received in small numbers. Carcase and non-carcase submissions for the same quarter (October-December) for period 2016-2020 are shown in Figure 1.

Oct-Dec	Non-carcase submissions APHA	Non-carcase submissions SAC	Total non-carcase submissions	Carcase submissions APHA	Carcase submissions SAC	Total carcase submissions	Grand total
2016	63	15	**78**	37	4	**41**	**119**
2017	24	21	**45**	26	8	**34**	**79**
2018	14	8	**22**	27	9	**36**	**58**
2019	15	11	**26**	26	8	**34**	**60**
2020	14	15	**29**	19	4	**23**	**52**

Table 1 Diagnostic submissions in Quarter 4 (October - December) 2020, for alpacas, llamas and farmed deer

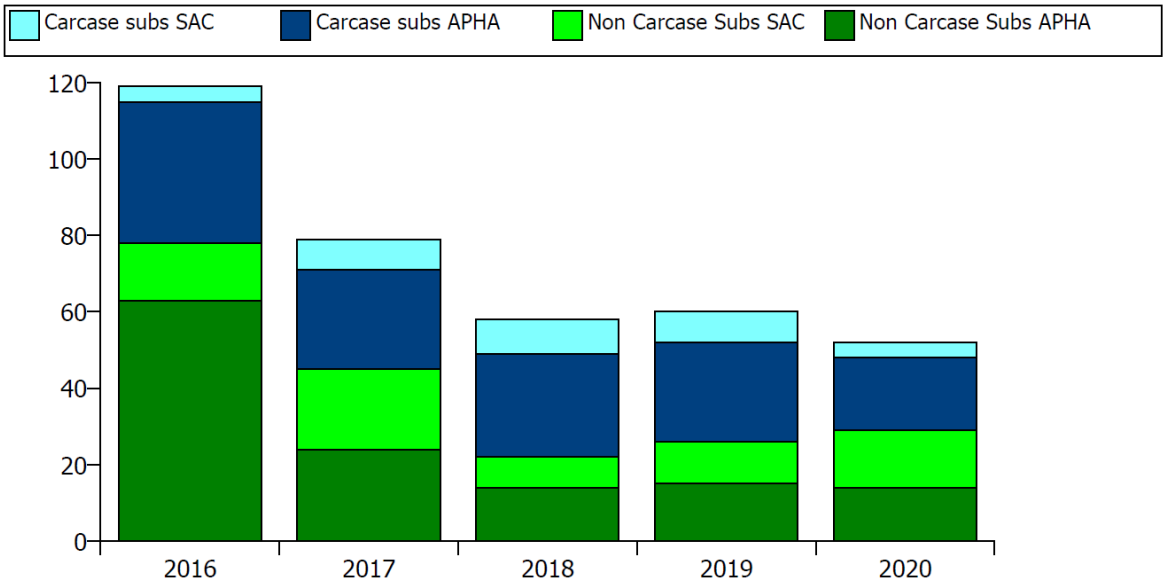

Figure 1 Diagnostic submissions in Quarter 4 (October - December) 2020, for alpacas, llamas and farmed deer in a graph

Total diagnostic submissions for Quarter 4 for all years (2016-2020) for each main species covered by this report and also for each main geographical area (Table 2).

All Years	Alpaca	Deer	Llama	Sum
Eastern England	56	25	2	83
Northern England	33	9	2	44
Scotland	37	38	6	81
Wales	13	10		23
Western England	72	22	7	101
Unknown	27	7	2	36
Summary	**238**	**111**	**19**	**368**

Table 2 Total diagnostic submissions for Quarter 4 for all years (2016-2020) in the different geographical areas

Annual Results (January-December 2020) compared to previous four years: number of submissions on Table 3, graphically represented on Figure 2 and divided in the different geographical areas on Table 4.

	Non-carcase submissions APHA	Non-carcase submissions SAC	Total non-carcase submissions	Carcase submissions APHA	Carcase submissions SAC	Total carcase submissions	Grand total
2016	239	50	**289**	105	14	**119**	**408**
2017	142	81	**223**	108	27	**135**	**358**
2018	68	47	**115**	121	35	**156**	**271**
2019	62	53	**115**	106	29	**135**	**250**
2020	67	46	**113**	77	12	**89**	**202**

Table 3 Total diagnostic submissions for all years (2016-2020)

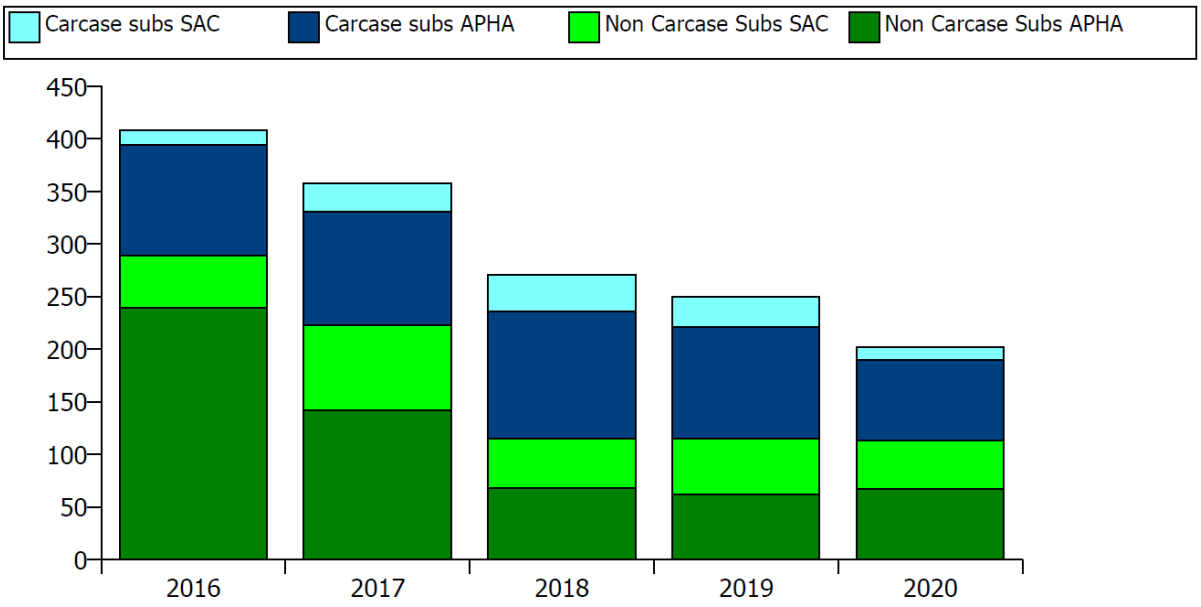

Figure 2 Total diagnostic submissions for all years (2016-2020) in a graph

All Years	Alpaca	Deer	Llama	Sum
Eastern England	243	93	22	358
Northern England	148	48	9	205
Scotland	123	124	26	273
Wales	72	14	4	90
Western England	290	71	24	385
Unknown	134	27	17	178
Summary	**1010**	**377**	**102**	**1489**

Table 4 Total diagnostic submissions for all years (2016-2020) for each main species covered by this report and also for each main geographical area

New and re-emerging diseases and threats

Nothing to report this quarter.

Diagnoses from the GB scanning surveillance network including unusual diagnoses

Camelids

Pneumonia and hepatopathy in an adult alpaca

Loss of condition was reported in a five-year-old alpaca over several months, one out of a group of fifteen affected. It aborted its cria at the same time as it began to lose condition and had received various tests and treatments without any significant impact and eventually died. Gross examination showed signs of a hepatopathy with multifocal coalescing pale/necrotic/proliferative lesions throughout the liver, and the lungs were diffusely firm/with increased consistency. Histopathology confirmed a significant chronic pneumonia of uncertain aetiology (but not caused by mycobacterial infection) and a hepatopathy which was considered likely to have been caused by vascular insufficiency or anoxia such as that caused by *Haemonchus* spp infection. The owners were advised to monitor other animals on the premises for worm burdens and to carry out speciation of worm eggs if trichostrongyle eggs are identified.

Anaemia and hepatopathy in an alpaca

A three-year-old female alpaca died following a period of wasting and anaemia. The condition started after it had had a cria six months earlier. It had generalised subcutaneous oedema, excess fluid in the body cavities and pallor of the kidneys. Histopathology confirmed chronic diffuse centrilobular vascular hepatopathy and necrosis. The liver changes were suspected to be due to chronic hypoxia secondary to anaemia and parasitism; haemonchosis would have been the most probable cause.

Figure 3 pale mottled liver, changes consistent with chronic hypoxia due to anaemia

Diaphragmatic paralysis in an alpaca cria

A five-month-old cria was submitted to investigate clinical signs of abdominal breathing prior to deterioration and death despite antibiotic and NSAID treatment. A week previously, the cria was separated from its mother for weaning and became extremely distressed with abdominal breathing noted at that time.

At post mortem the most significant finding was very marked haemorrhagic/congested lungs. Bacteriology was unrewarding. Histopathology of diaphragm found changes indicative of Wallerian degeneration of the phrenic nerve, consistent with a diagnosis of diaphragmatic paralysis. This is the second diagnosis of diaphragmatic paralysis made by APHA this year and should be considered as an important differential in camelids with respiratory disease signs.

Diaphragmatic paralysis has been reported previously in alpacas (Byers and others 2011) but the aetiology is unknown. Potential causes include injury or compression of the nerve and nerve roots or relevant areas of the CNS and toxic peripheral neuropathies. In this case, self-inflicted trauma occurring during the weaning attempt may have been the

underlying cause, although no gross evidence of injury was found at post mortem examination.

Unknown Syndrome

The third cria to die unexpectedly in a well-managed group of Alpacas during the course of a month was submitted to investigate the cause. The first death occurred in a yearling from a different field and a definitive cause of death could not be determined. The second one was a six-week-old cria from the same field as the submitted animal and testing of submitted samples found moderate tubular injury in the kidneys suggestive of nephrotoxic injury. This cria was part of a group of 24 animals out at grass with the dams and was growing well, which was confirmed by regular weighing. The animal was unexpectedly found by the owner in sternal recumbency, unable to stand/weak. It was transported to the nearby shed and died within five minutes, with blood coming out of the mouth prior to death. The crias had access to grass, with hay and supplementary adult camelid feed available. Significant findings during postmortem examination included: mild fibrinous peritonitis and pleuritis, clotted blood within the mouth, trachea and bronchi, moderately oedematous lungs with dark-red foci throughout, enlarged spleen with blotchy appearance, generalised lymphadenopathy with red-purple discoloration, and pale kidneys.

Despite extensive testing including BVD PCR, bacteriology, lead and arsenic tissue testing, no diagnosis was achieved. Histopathology confirmed multifocal haemorrhages in the lung, mild centrolobular hepatic necrosis and moderate subacute nephrotoxic tubular injury. The liver and lung lesions were non-specific. The majority of the nephrotoxic agents were ruled out through either history, visual examination or testing. Although there was no evidence of enteritis and histological examination of the fixed brain found no remarkable changes, clostridial enterotoxaemia remained a plausible explanation for the renal pathology and acute death of this animal.

Colisepticaemia in an alpaca cria

One one-week-old cria was submitted to investigate sudden death. It had been found dead on the day prior to submission and had been refrigerated since then. The cria was reported to have had an assisted birth and there had been concerns that it had received sub-optimal levels of colostrum. The cria had had a microchip inserted at the base of the left ear on the day prior to one neonatal cria was submitted to investigate sudden death. The gross findings were suggestive of peritonitis and septicaemia with the gross pathology suggesting an ascending infection from the navel up the urachal ligaments. The history suggested that the cria may have had suboptimal colostrum intake. The bacteriology indicated a colisepticaemia.

”Alpaca fever” in an adult alpaca

Streptococcus equi zooepidemicus was found in systemic distribution (lung, liver and peritoneal swab) in samples from a three year old, male alpaca which was found dead. No others from the group of six were showing any signs of illness. While this is an unusual

finding, Strep. equi zooepidemicus has recently been reported in alpacas as ‘alpaca fever’ (Corpa and others 2018). It is considered to be a commensal in equines, where it is well recognised to cause opportunistic infections.

Camelid abortions

An aborted llama fetus was submitted to investigate the cause of abortion with a yearling llama having aborted overnight. The dam was thought to be around five weeks gestation, and showed signs of general malaise following the abortion, with the other six llamas in the group appearing well.

Although a definitive cause of the abortion was not identified, a heavy pure growth of E. coli from the fetal stomach content was considered the most likely cause of abortion despite no histological signs of a bacterial cause. The toxoplasma PCR testing was inconclusive but again with no signs of its involvement identified in the histological sections: however the brain was too autolysed for meaningful examination.

Farmed Deer

A four-year-old male castrated reindeer was submitted from a holding after being found dead. This was the second animal out of thirteen to die in the last week. The herd, which are used mainly for breeding and tourism purposes was closed. Animals were reported to graze with access to a diet consisting of straw, hay, lichen, cattle nuts and sugar beet. On post mortem examination, serosal haemorrhages were noted over the caecum and colon. The caecal mucosa was intensely reddened with multifocal areas of dark haemorrhage present. Caecal and colon contents were dark red in colour. Main differential diagnoses included gastrointestinal parasites, yersiniosis, enteric listeriosis, salmonellosis, clostridial disease and malignant catarrhal fever (MCF). Testing to investigate these conditions was carried out and the malignant catarrhal fever PCR performed on spleen was positive, confirming this as the cause of death. Reindeer are highly susceptible to MCF, and require a significantly lower infective dose compared to cattle. The infective reservoir for OvHV-2 is domestic sheep with spread to susceptible animals occurring via airborne transmission from nasal secretions. Deer are a dead end host and so there is no threat of spread from affected deer within the herd, however grazing near sheep should be avoided. No sheep were kept on the unit in this case however it was unknown whether sheep were kept on neighbouring farms.

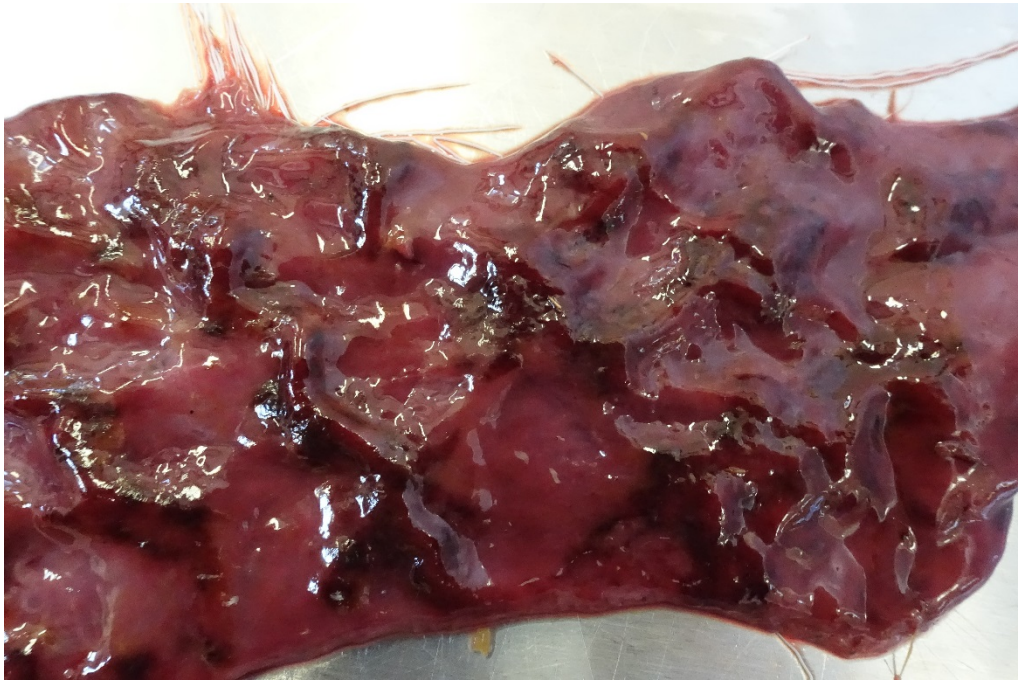

Figure 4 Reddened mucosa with multifocal areas of dark haemorrhage

Horizon scanning

Covid-19 effects

As described in the previous two quarterly reports, the current Covid-19 crisis has continued to have an impact on the number of camelid and farmed deer carcase submissions to the GB scanning surveillance network during Q4-2020. This may impact our ability to monitor endemic disease trends as well as detecting new and re-emerging diseases through the surveillance network. The other livestock species submission numbers have not been adversely affected to the same degree by the current pandemic crisis. Communications have been sent to veterinary practices to indicate that the Veterinary Investigation Centres and Post mortem partnersare continuing to function throughout and encouraged veterinary practitioners to make contact to discuss cases.

Publications

Research Article

NONNO, R., DI BARI, M. A., PIRISINU, L., D'AGOSTINO, C., VANNI, I., CHIAPPINI, B., MARCON, S., RICCARDI, G., TRAN, L., VIKØREN, T., VÅGE, J., MADSLIEN, K., MITCHELL, G., TELLING, G. C., BENESTAD, S. L. & AGRIMI, U. (2020) Studies in bank voles reveal strain differences between chronic wasting disease prions from Norway and North America. Proceedings of the National Academy of Sciences 117, 31417-31426

https://doi.org/10.1073/pnas.2013237117

References

BYERS, S., BARRINGTON, G., NELSON, D., HALDORSON, G., HOLT, T. & CALLAN, R. (2011) Neurological Causes of Diaphragmatic Paralysis in 11 Alpacas (Vicugna pacos). J Vet Intern Med 25, 380-385

CORPA, J. M., CARVALLO, F., ANDERSON, M. L., NYAOKE, A. C., MOORE, J. D. & UZAL, F. A. (2018) Streptococcus equi subspecies zooepidemicus septicemia in alpacas: three cases and review of the literature. J Vet Diagn Invest 30, 598-602

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