



**Department of Agriculture,  
Food and the Marine  
Laboratories Quarterly Surveillance Report  
Quarter 4 of 2019**



An Roinn Talmhaíochta,  
Bia agus Mara  
Department of Agriculture,  
Food and the Marine

## Introduction

The veterinary laboratories operated by the Department of Agriculture, Food and Marine (DAFM) provide data on the patterns and frequency of occurrence of non-regulated diseases in farmed animal populations in Ireland. This disease surveillance role is fulfilled through routine diagnostic, post-mortem and targeted surveillance activities. Data from these activities are published collectively on a monthly, quarterly and annual basis. This quarterly report and other surveillance reports can be accessed at: [Regional Veterinary Laboratory Reports](#).

The surveillance role of the laboratories complements the broader remit of DAFM in surveillance and control of diseases of animals. In addition to annual reports, periodical reports are published to ensure the timely feedback of accurate data to the relevant industry stakeholders to inform husbandry practices and disease control measures.

The quarterly surveillance reports are designed to provide a brief overview of disease trends in a given quarter. Further, and more detailed, commentary on individual cases or individual outbreaks can be accessed through monthly reports published in the Veterinary Ireland Journal and also available at: [Regional Veterinary Laboratory Reports](#).

## This Quarter

The data presented in this report refer to the fourth quarter of 2019 (October to December). Met Éireann data show that rainfall levels were high for the period, particularly for November. The meteorological data also show that average temperatures for the period were lower than the long term average. Cold and wet weather are often associated with increased disease incidence for various reasons, but the number of carcass submissions recorded in this period was lower than that seen in the same period in either 2017 or in 2018.

In cattle, a noticeable increase in the number of blackleg cases, compared to the same period in previous years, can be seen. The increase in cases had been noticed by veterinary staff in the RVLs at the time, and it is believed that it may be associated with heavy rain, which lead to flooding in certain areas. A more detailed report on the increased number of cases is available on DAFM's Animal Health Surveillance website [here](#).

Another finding of note in the bovine data was the relatively small percentage of calf faecal samples, 14.9%, testing positive for cryptosporidium during this quarter in comparison to the same period in recent years. Almost double that proportion of calf faecal samples, 27.4%, tested positive for rotavirus.

In sheep, fasciolosis or liver fluke infestation returned to the list of most commonly diagnosed conditions. This contrasted with the situation in quarter 4 of 2018, when there were very few cases after a very dry summer in that year. The exposure of Irish sheep to fluke this year, especially in northwestern counties, has already been flagged by DAFM in the annual liver fluke forecast and in the monthly reports on lamb liver fluke antibody testing, e.g. this report issued in [November 2019](#).

## The weather in Quarter 4 of 2019

### Rainfall

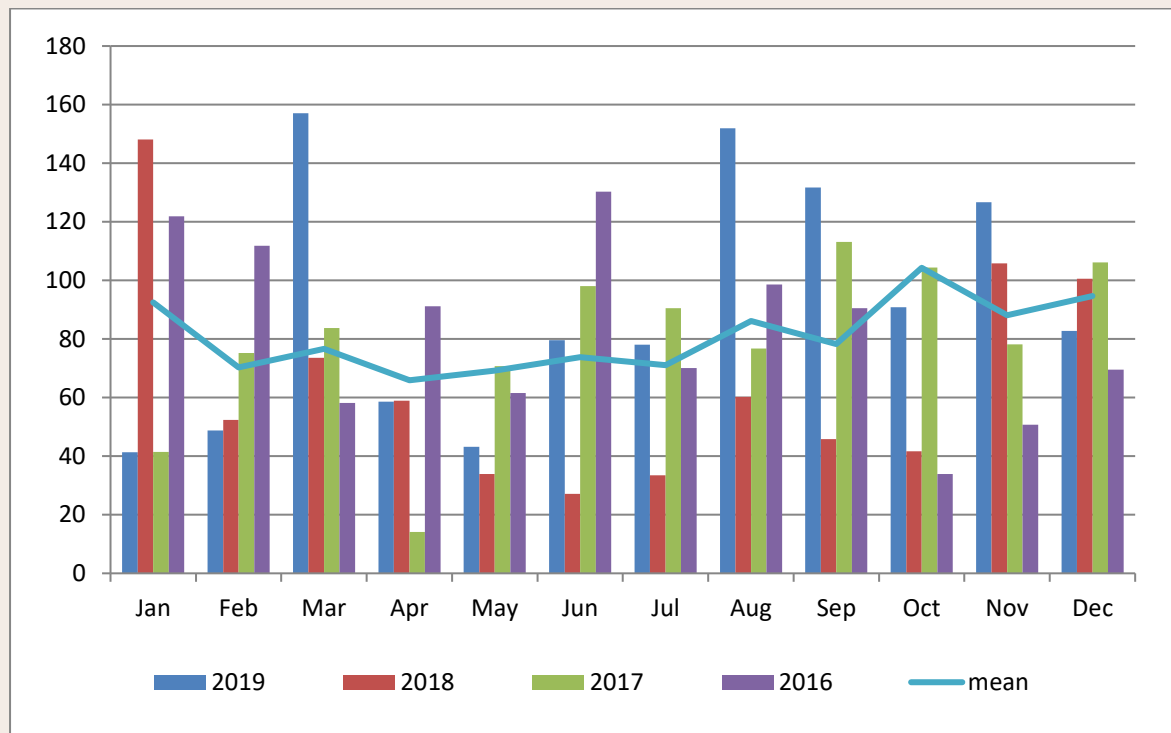


Figure 1: The average monthly rainfall (in millimetres) recorded for Quarter 4 of 2019 compared to the three previous years and the 30-year mean monthly rainfall (trend line). (Source: Met Eireann, [www.met.ie](http://www.met.ie)).

### Temperature

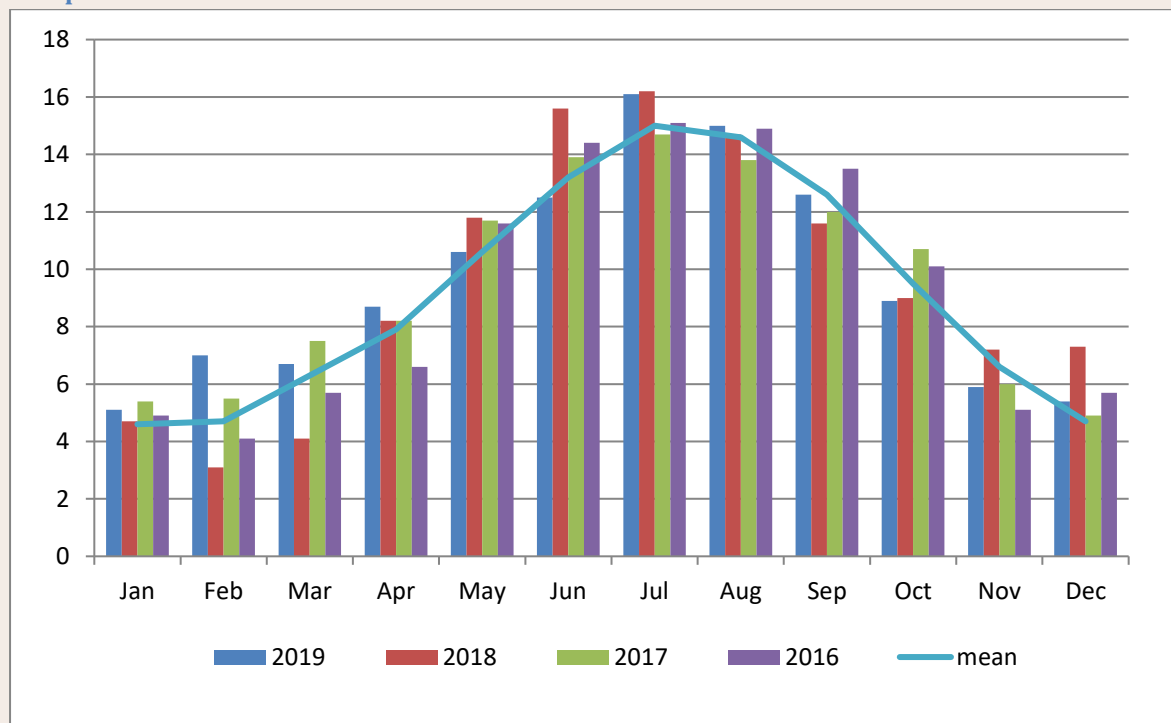


Figure 2: The mean monthly temperature (in degrees Celsius) for Quarter 4 of 2019 compared to the previous three years and the 30-year mean monthly temperature (trend line). (Source: Met Eireann [www.met.ie](http://www.met.ie)).

## Soil temperature

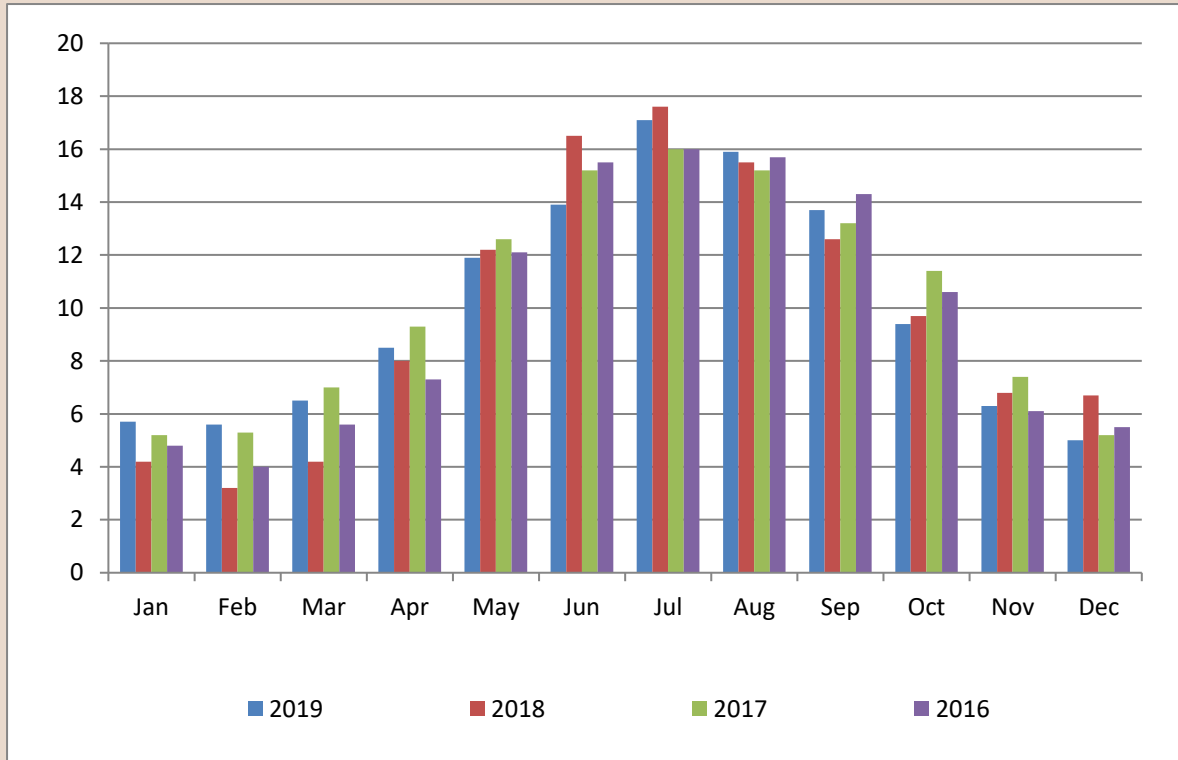


Figure 3: The mean monthly soil temperature (in degrees Celsius) for Quarter 4 of 2019 compared to the previous three years. (Source: Met Eireann [www.met.ie](http://www.met.ie)).

## Submission numbers to the RVLs in Quarter 4 of 2019

SPECIES	Carcass	Diagnostic	Foetus	Total
Avian	79	67		146
Bovine	472	5820	646	6938
Cervine	19			19
Equine	2	41	1	44
Ovine	184	273	18	475
Porcine	110	79	13	202
Badger	50	5		55
Caprine	8	13	1	22
Exotic	9	2		11
Vulpine	437			437
Lagomorph	29	73		102
Piscine			3	3
Dolphin	2			2
Porpoise	2			2
<b>Total</b>	<b>1403</b>	<b>6373</b>	<b>682</b>	<b>8458</b>

Table 1: The submission numbers of carcasses, diagnostic samples and foetuses to the RVLs during Quarter 4 of 2019. Note that figures refer to sample numbers – one carcass or foetus counts as one sample under the carcass or foetus headings, one blood sample or faecal sample counts as one sample under the diagnostic heading.

## Bovine disease surveillance

### The causes of bovine mortality (all ages)

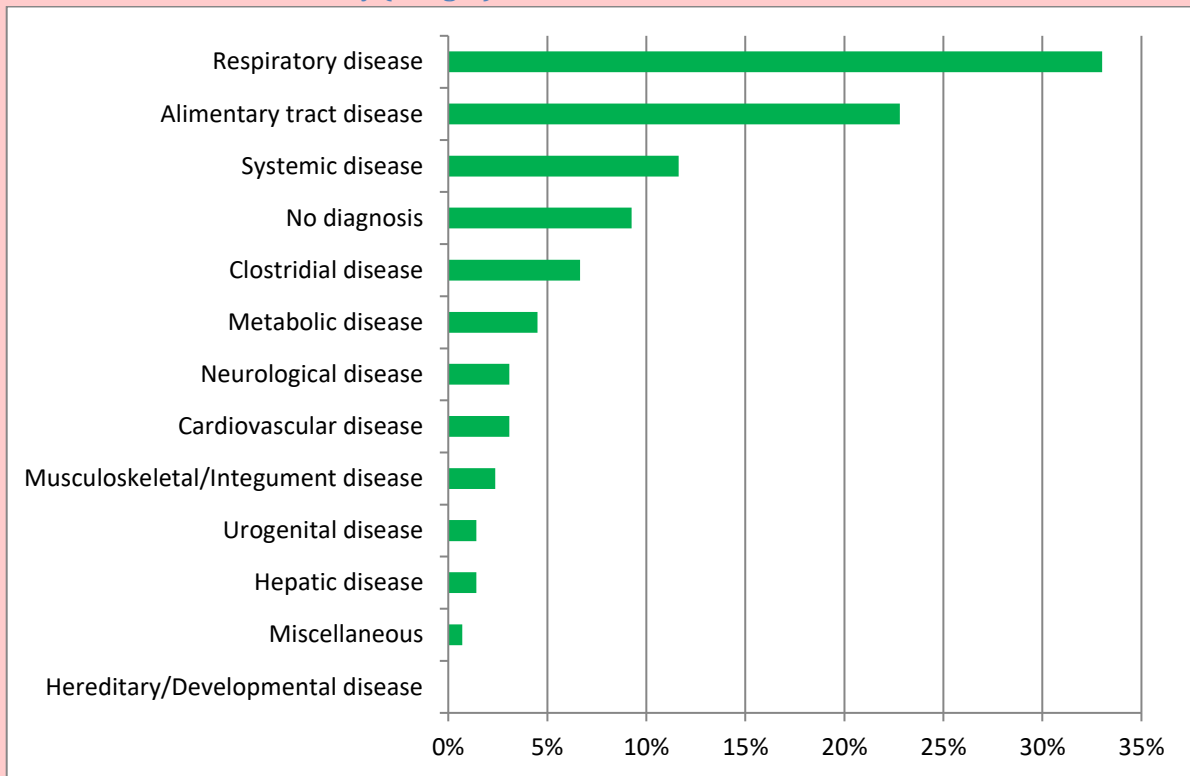


Figure 4: The causes of bovine mortality recorded on post-mortem examination in cattle of all ages by the RVLs, categorised by system or cause, during Quarter 4 of 2019 (n=421).

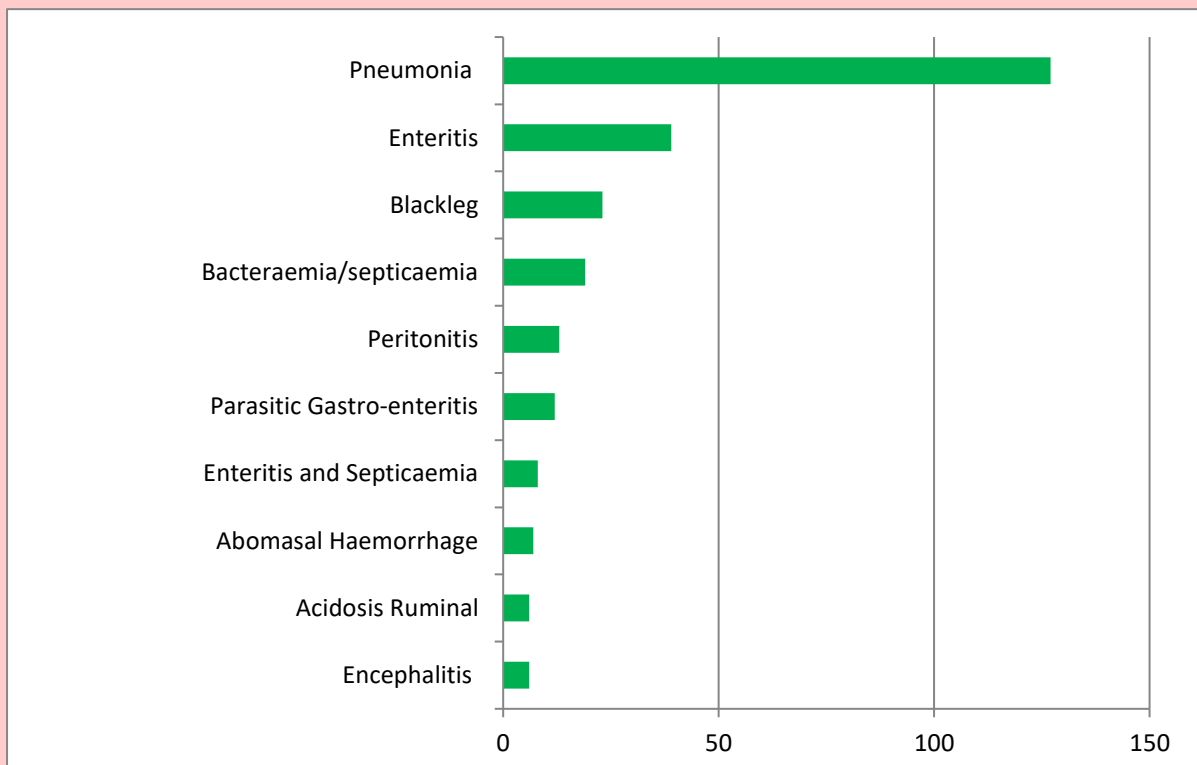


Figure 5: The ten most common individual diagnosed causes of death in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=421).

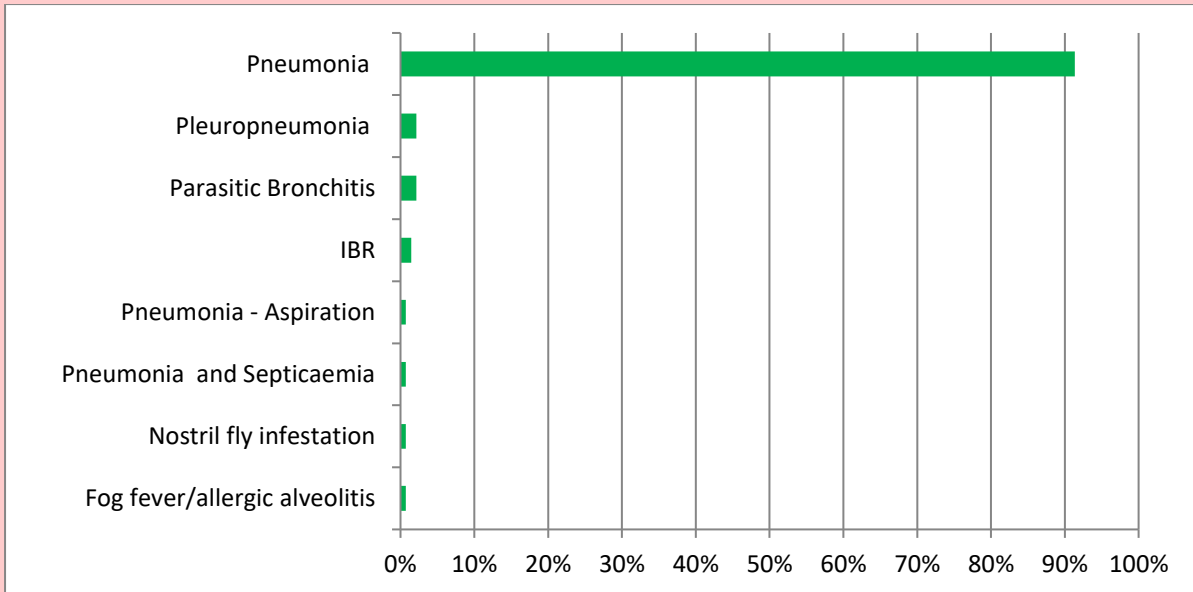


Figure 6: The relative frequency of the most common individual bovine respiratory disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=139).

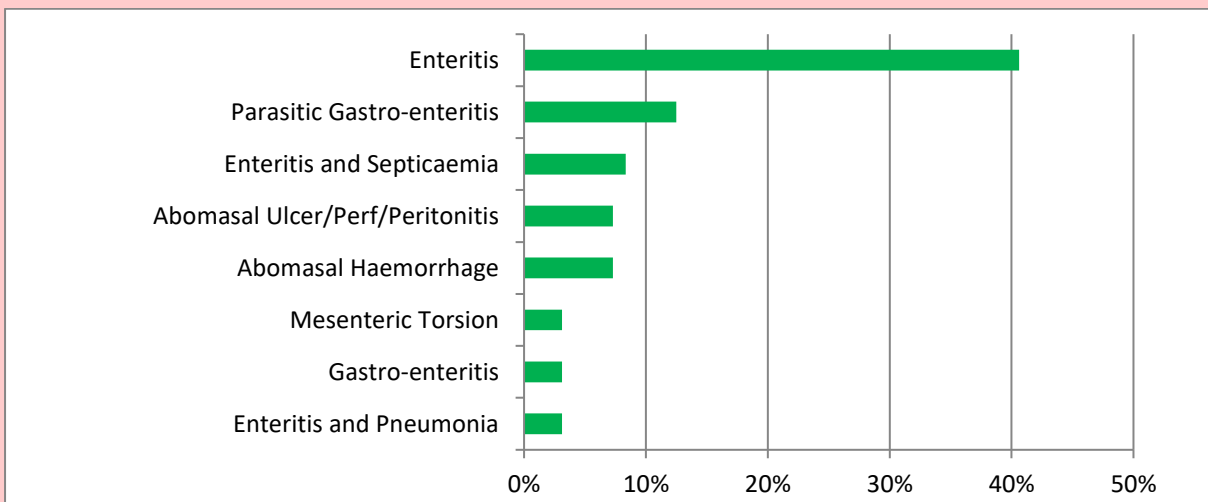


Figure 7: The relative frequency of the most common individual bovine alimentary tract disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=96).

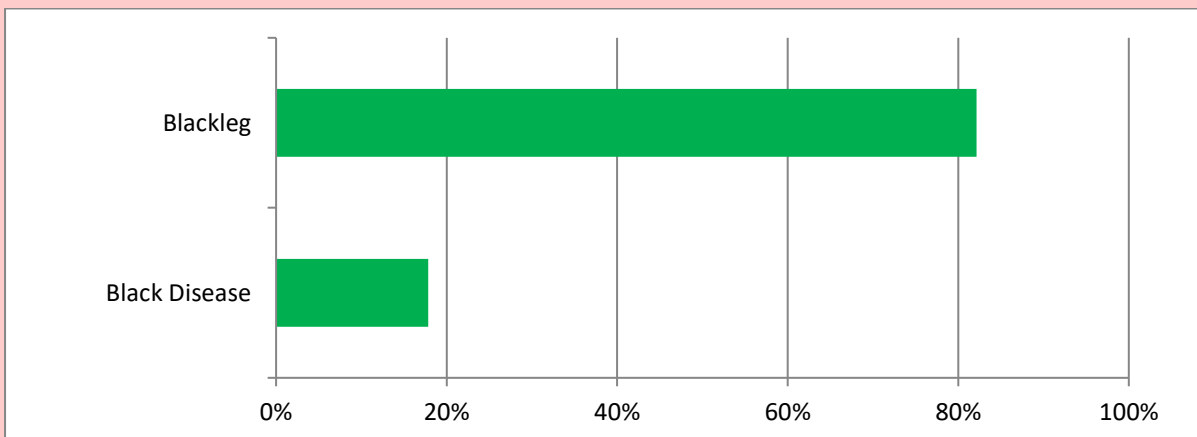


Figure 8: The relative frequency of bovine clostridial disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=28).

### The causes of bovine mortality (age-specific)

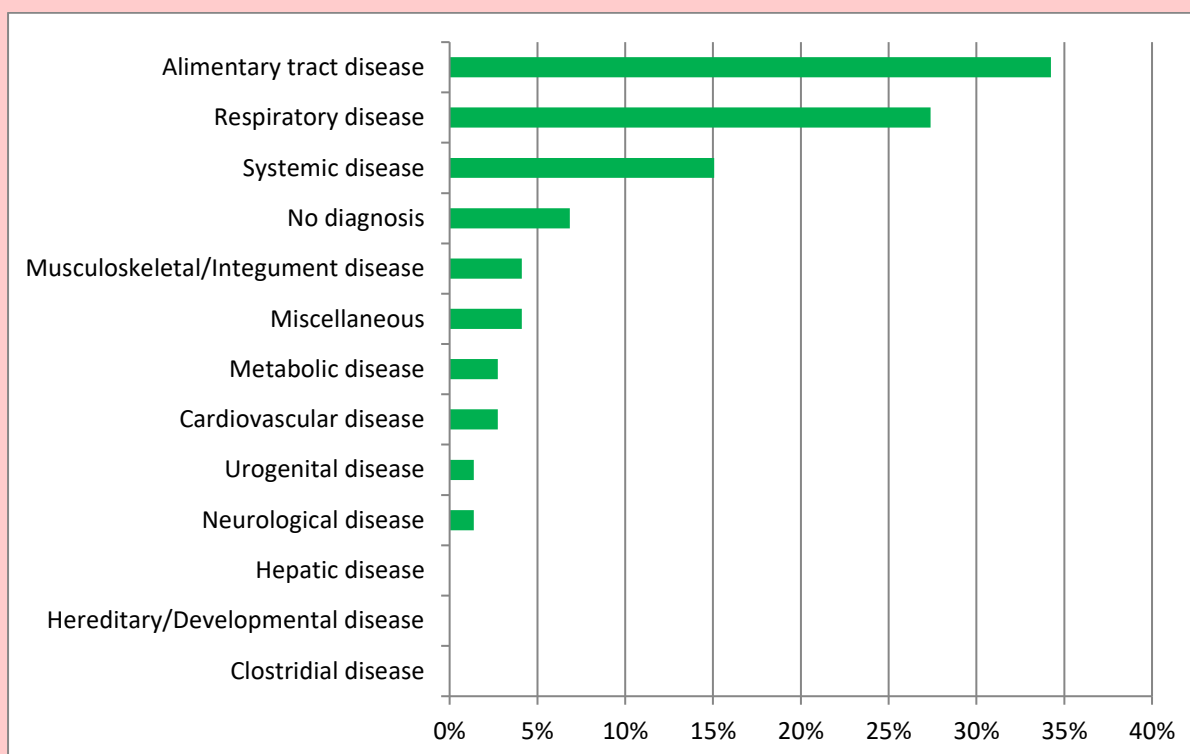


Figure 9: The causes of bovine mortality in neonatal calves (calves aged less than one month) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 4 of 2019 (n=73).

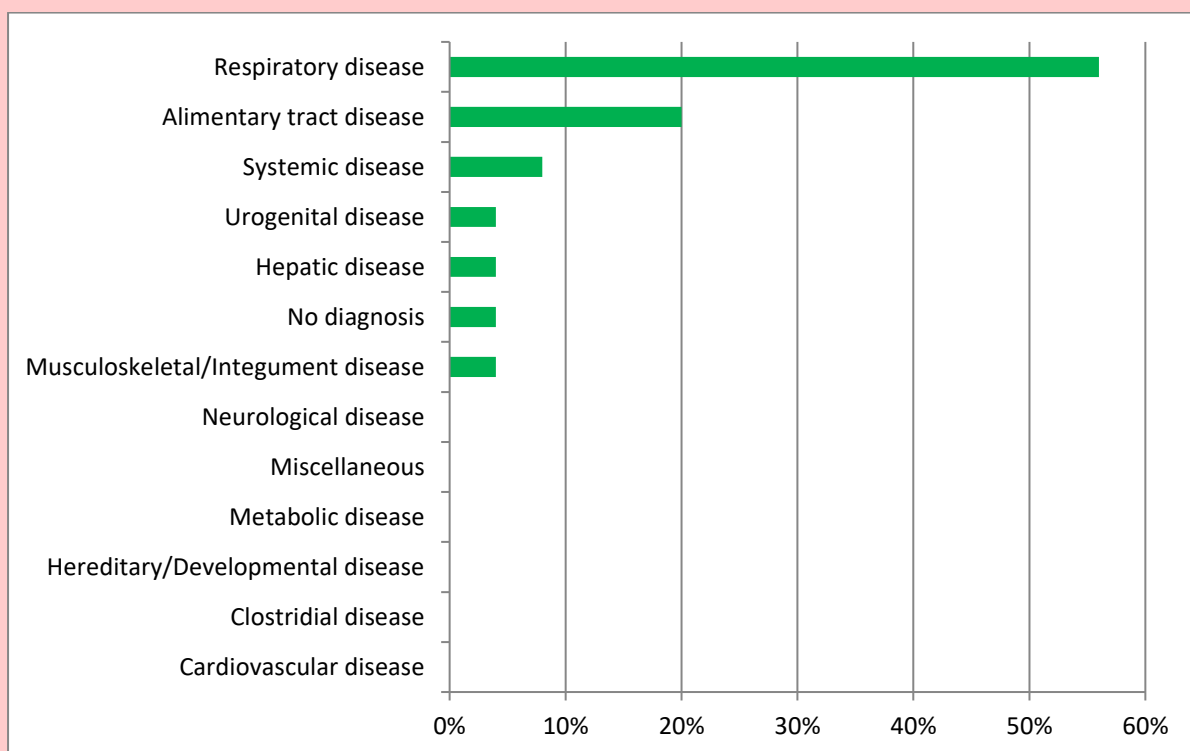


Figure 10: The causes of bovine mortality in calves (calves aged greater than one month but less than three months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 4 of 2019 (n=25).

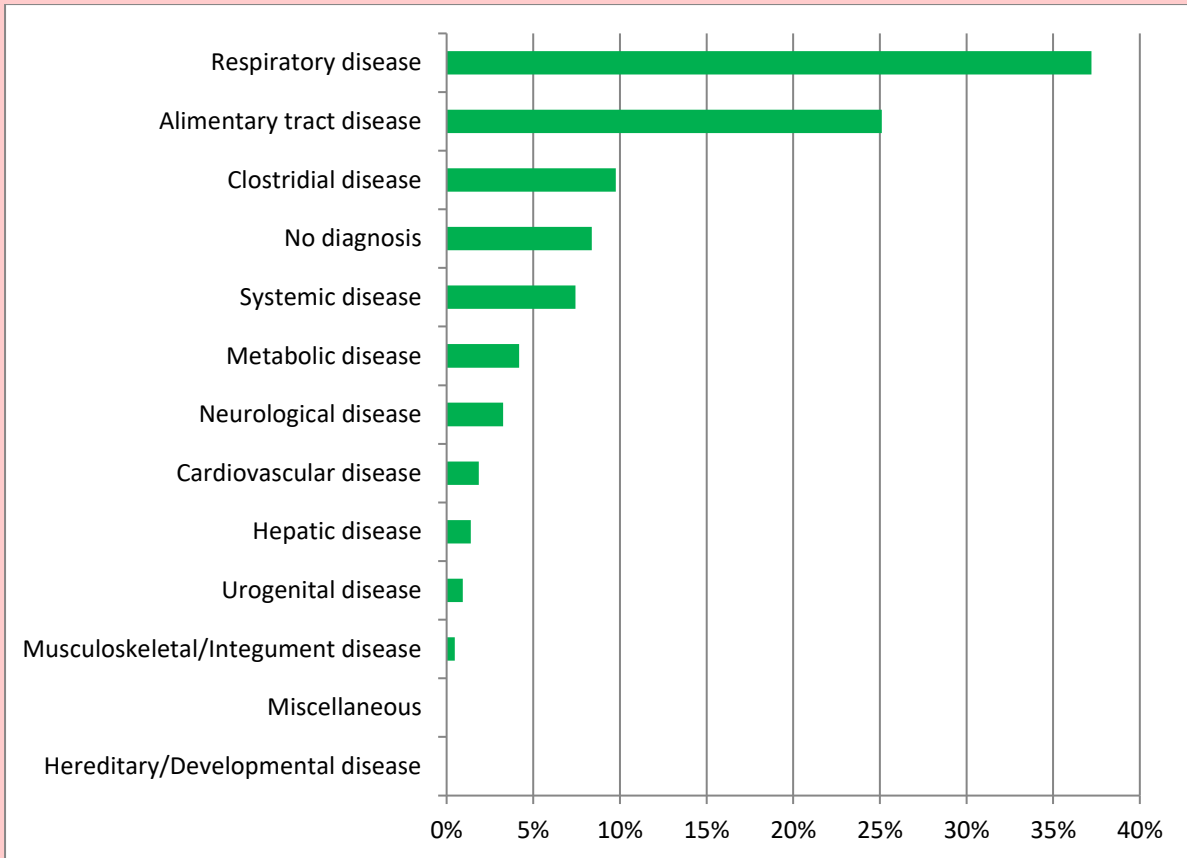


Figure 11: The causes of bovine mortality in weanlings (bovine animals aged greater than three months but less than twelve months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 4 of 2019 (n=215).

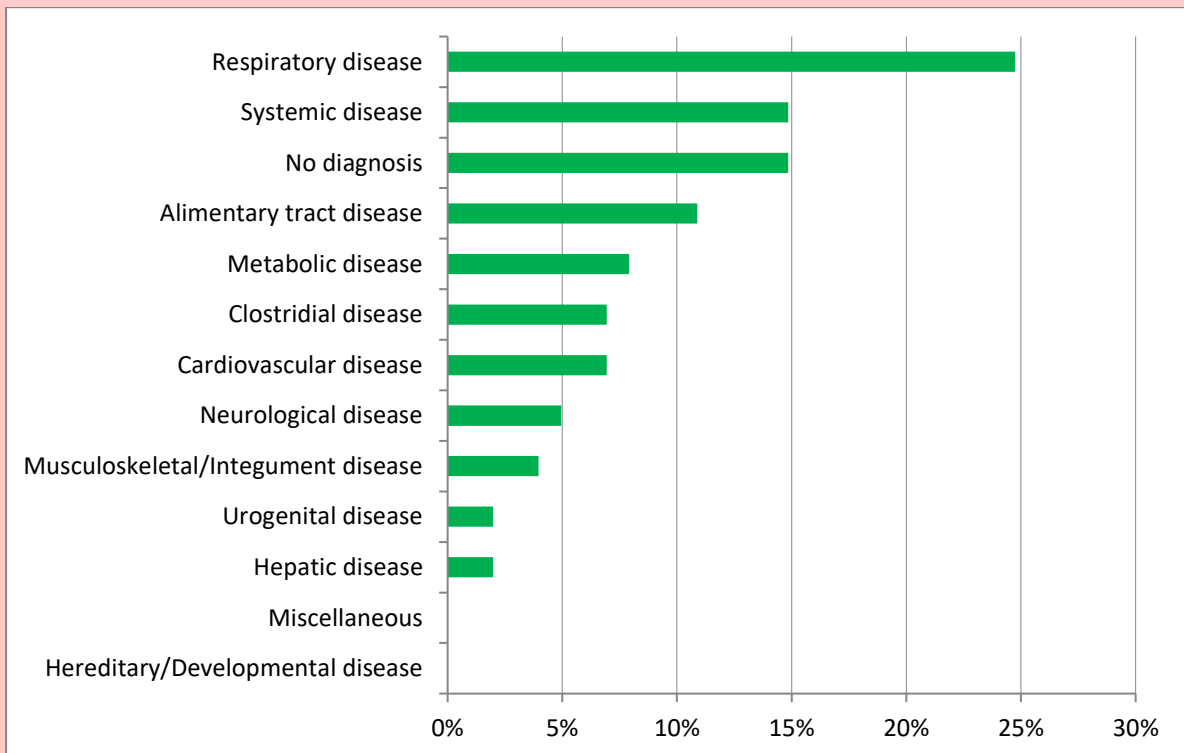


Figure 12: The causes of bovine mortality in adults (bovine animals aged greater than or equal to twelve months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 4 of 2019 (n=101).



The relative frequency of pathogens identified in specific post-mortem examination diagnostic categories

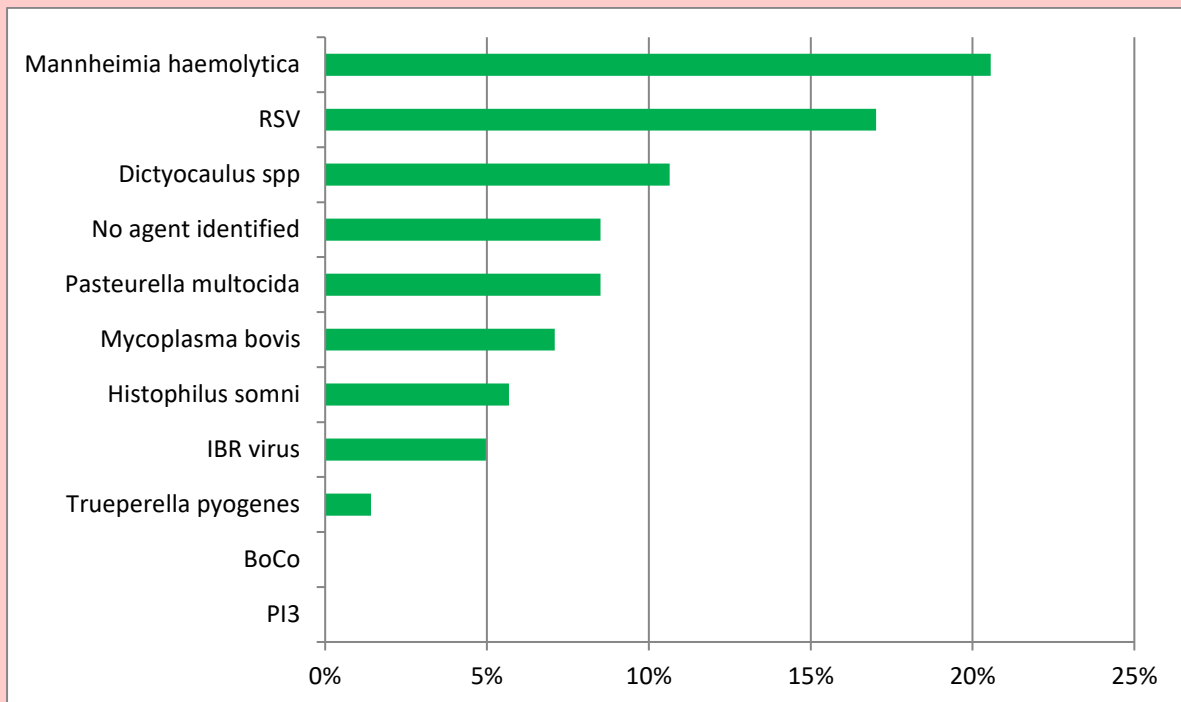


Figure 13: The relative frequency of specific respiratory pathogens identified in bovine carcasses examined on post-mortem examination by the RVLs, in which a diagnosis of respiratory disease was made during Quarter 4 of 2019 (n=141).

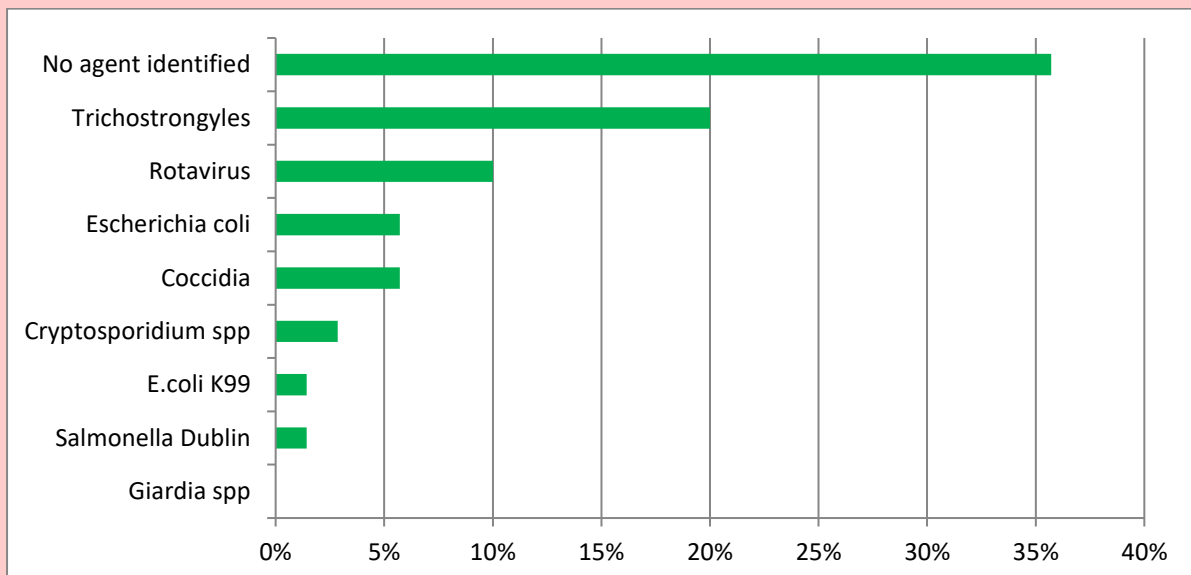


Figure 14: The relative frequency of specific alimentary tract disease pathogens identified in bovine carcasses examined on post-mortem examination by the RVLs, in which a diagnosis of 'enteritis' or 'gastro-enteritis' was made during Quarter 4 of 2019 (n=70).

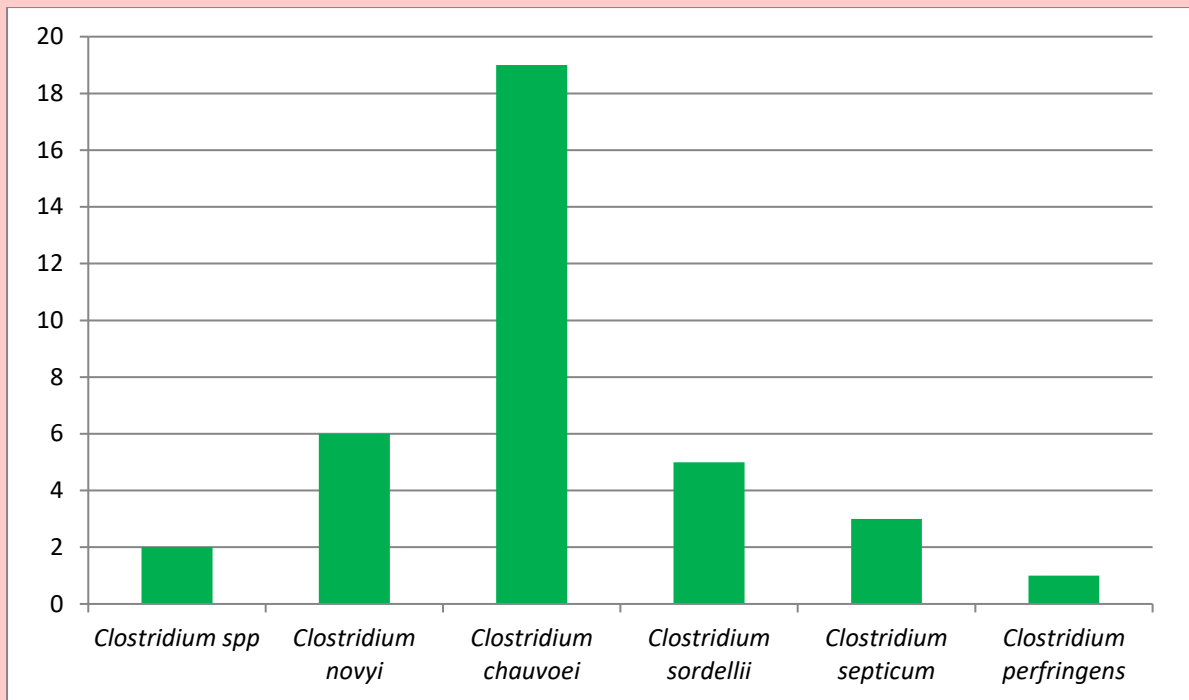


Figure 15: The frequency of identification of *Clostridium* species on post-mortem examination of bovine animal carcasses of all ages by the RVLs during Quarter 4 of 2019.

#### The frequency of detection of enteric pathogens in neonatal bovine enteritis cases

Enteric pathogen	Negative	Positive	%Positive
<i>E.coli</i> K99	101	2	1.9%
Coronavirus	108	4	3.6%
<i>Salmonella</i> culture	113	0	0.0%
<i>Cryptosporidium parvum</i>	97	17	14.9%
Rotavirus	82	31	27.4%

Table 2: The relative frequency of detection of enteric pathogens in the faecal samples of neonatal calves (aged less than one month of age) harvested during Quarter 4 of 2019 both from clinically ill animals by veterinary practitioners in the field and from bovine carcasses during post-mortem examination by the RVLs.

### Results of the zinc sulphate turbidity (ZST) test in neonatal calves

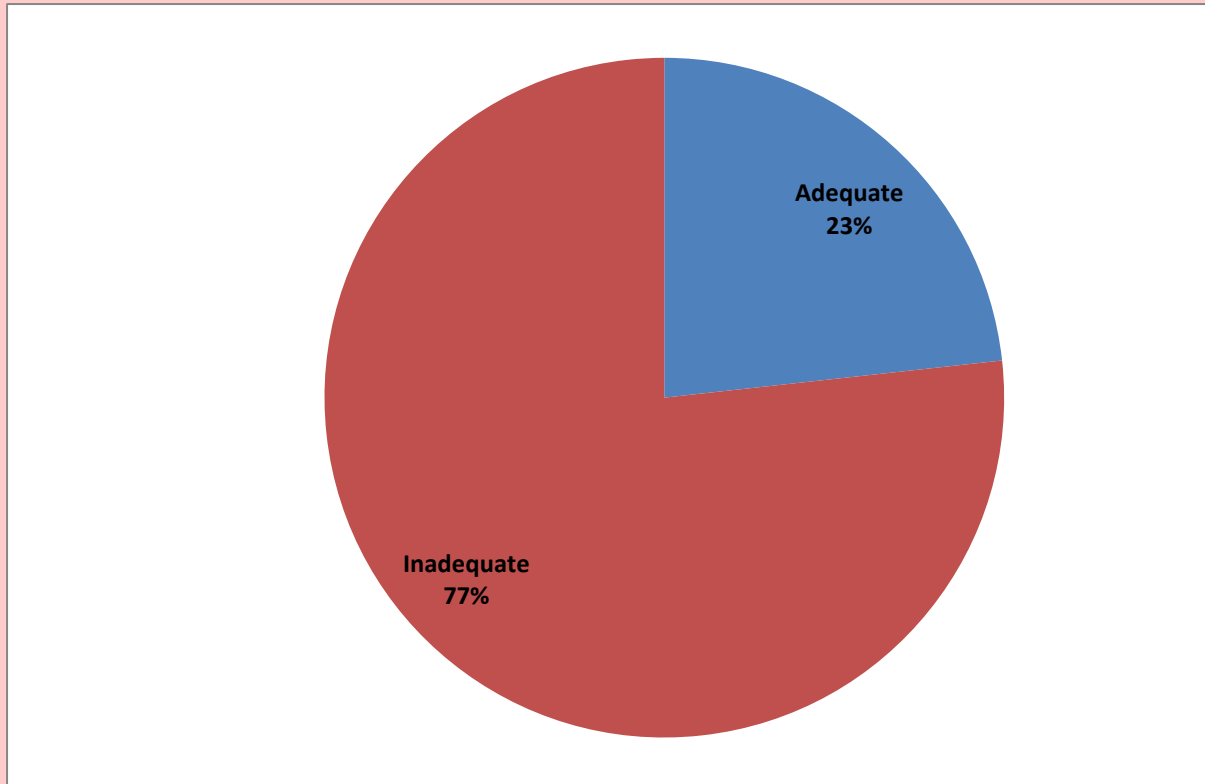


Figure 16: The results of the ZST tests performed both on clinically ill animals and on carcasses submitted for post-mortem examination by the RVLs during Quarter 4 of 2019 (n=43). The ZST test is used to determine the immunoglobulin status of the calf which can reflect the extent to which maternal colostrum immunity has been transferred to the calf *via* the colostrum. A value of greater than or equal to 20 units is considered indicative of adequate immunoglobulin levels in the calf.

### Results of milk samples submitted for mastitis culture

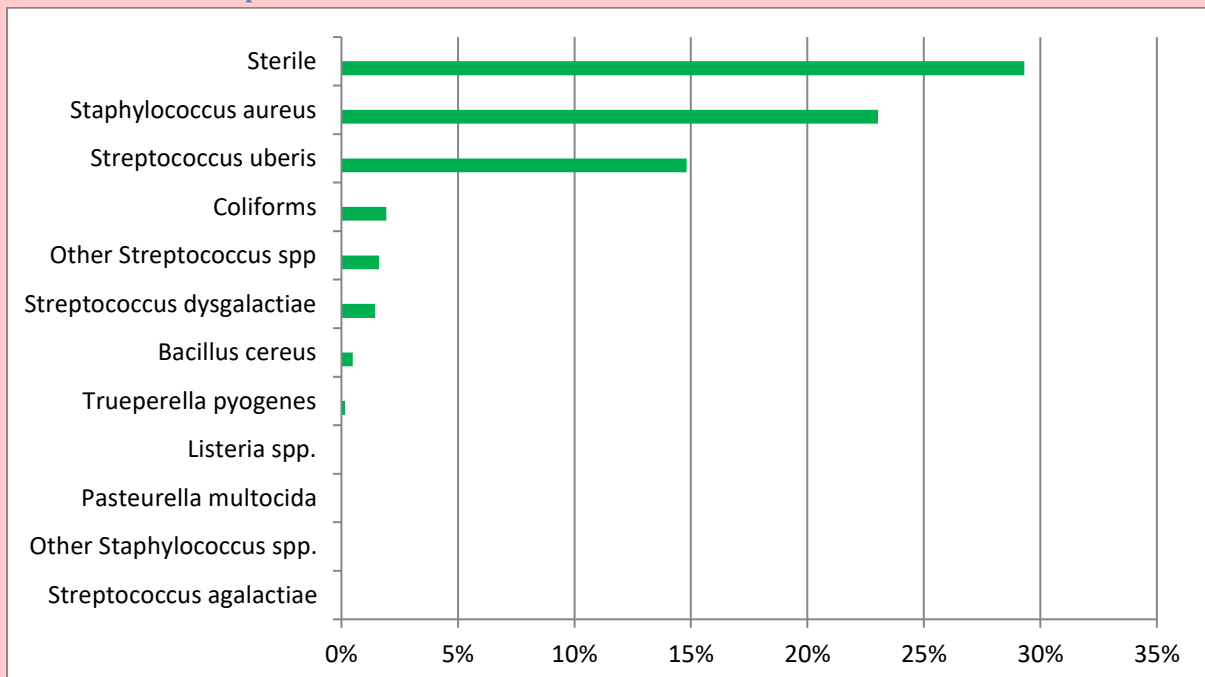
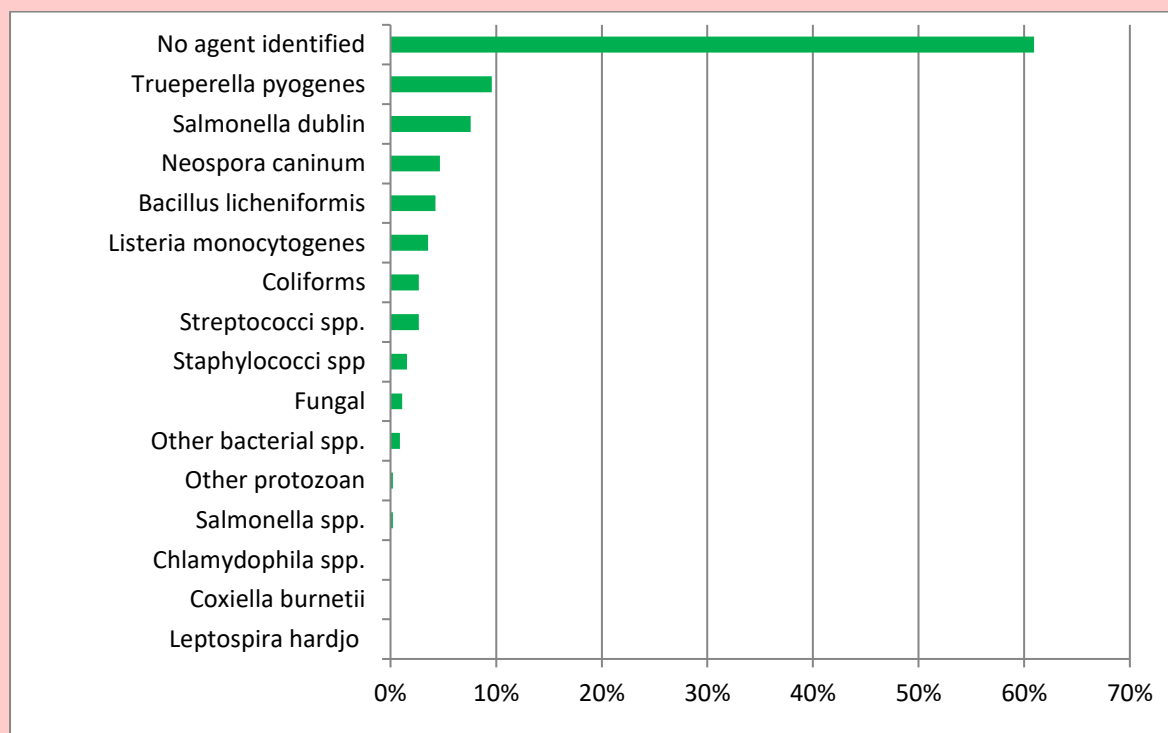


Figure 17: The relative frequency of isolation of specific mastitis pathogens in milk sample submissions (n=621) for bacteriological culture by the RVLs during Quarter 4 of 2019.

## Bovine abortion and perinatal death

Foetal diagnosis	Number	Percentage
Abortion	445	91.9%
Anoxia/Hypoxia	3	0.6%
Hereditary and developmental anomalies	3	0.6%
Mummification	2	0.4%
Stillbirth	0	0.0%
Perinatal mortality	2	0.4%
Placentitis	9	1.9%
Goitre	1	0.2%
Dystocia	0	0.0%
Bacteraemia/Septicaemia	1	0.2%
Weak calf syndrome	0	0.0%
Aspiration pneumonia	0	0.0%
Haemorrhage	1	0.2%
Miscellaneous causes	12	2.5%
No Diagnosis	5	1.0%

**Table 3: The causes of foetal (calves *in utero* up to 260 days gestation) or perinatal (calves from 260 days gestation to 48 hours post-delivery) death diagnosed on post-mortem examination (n=484) by the RVLs during Quarter 4 of 2019.**



**Figure 18: The relative frequency of detection of infectious agents in fetuses submitted to the RVLs for post-mortem examination during Quarter 4 of 2019 in which abortion, stillbirth or placentitis were diagnosed (n=448).**

## Ovine disease surveillance

### Causes of ovine mortality

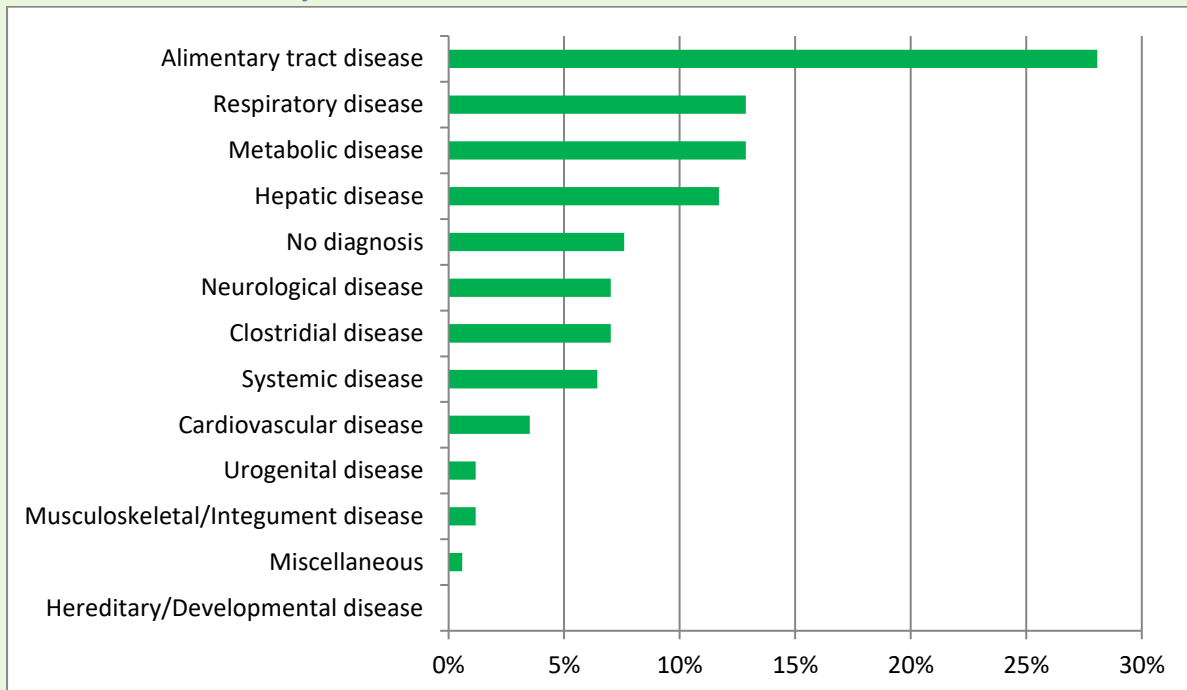


Figure 19: The causes of mortality in sheep carcasses recorded on post-mortem examination by the RVLs during Quarter 4 of 2019, categorised by the system affected or by cause (n=171).

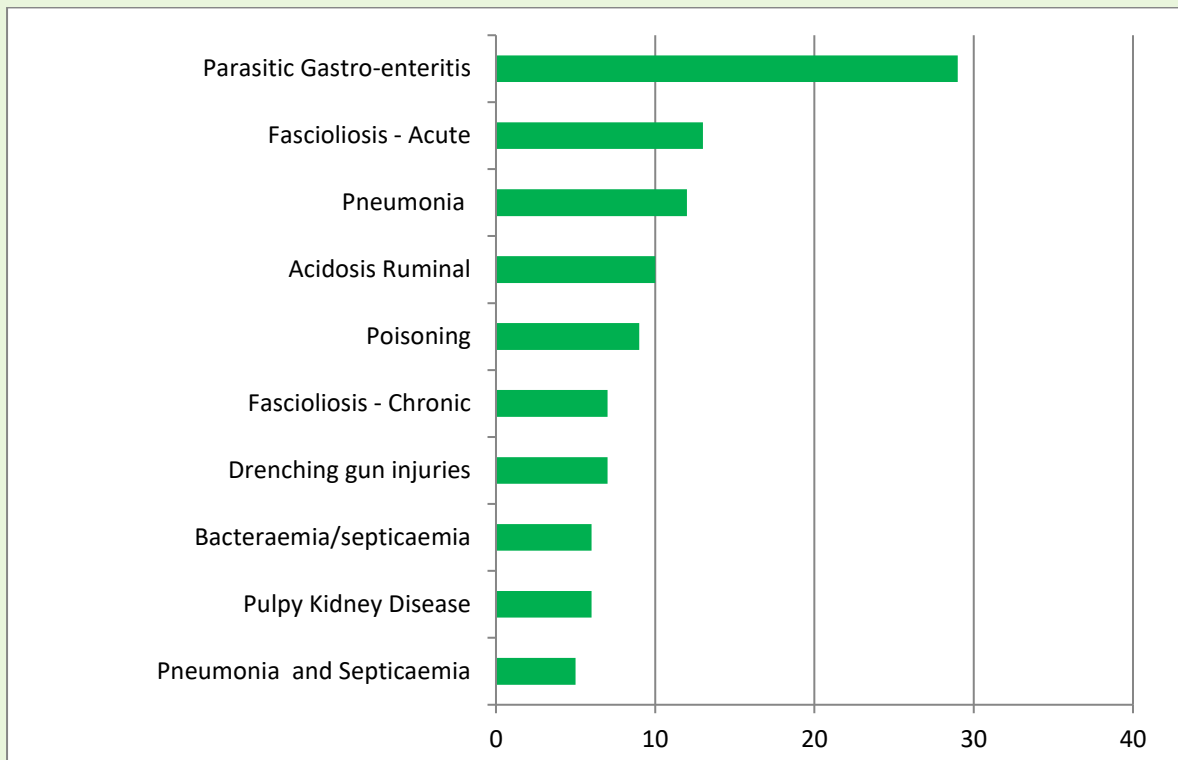


Figure 20: The ten most common individual diagnoses recorded in sheep carcasses on post-mortem examination by the RVLs during Quarter 4 of 2019

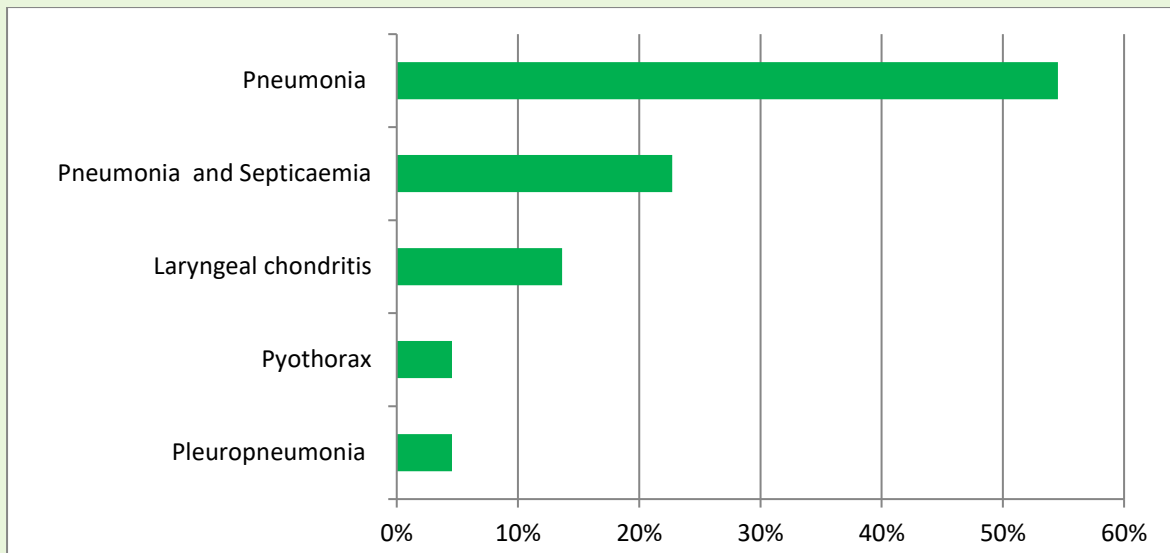


Figure 21: The relative frequency of respiratory disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=22).

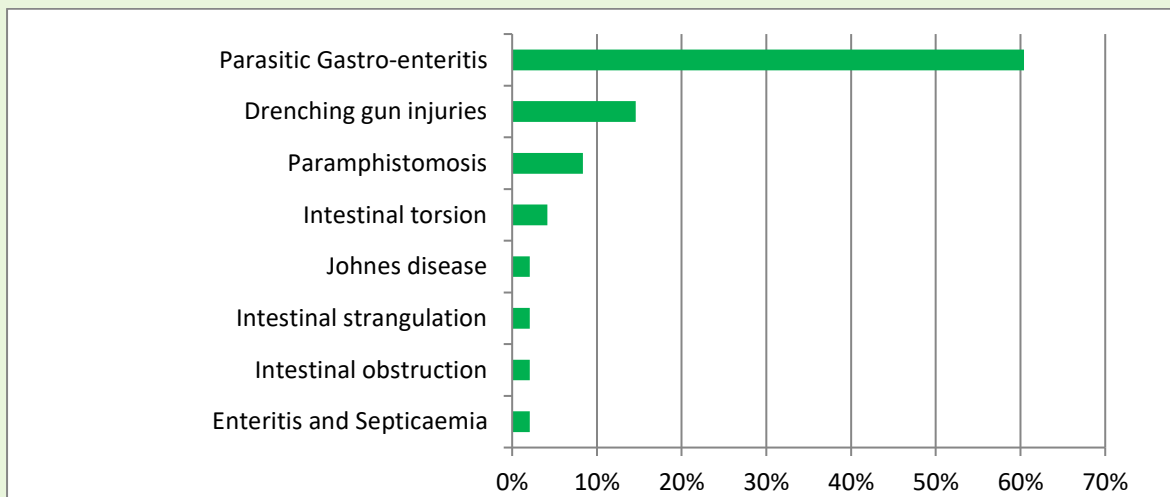


Figure 22: The relative frequency of alimentary tract disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=48).

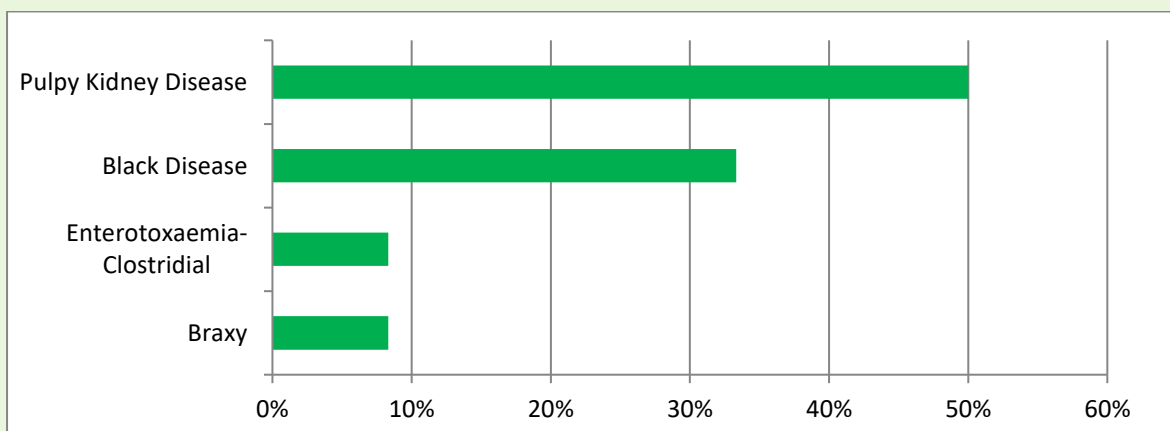


Figure 23: The relative frequency of clostridial disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=12).

Foetal diagnosis	Number	Percentage
Abortion	5	100.0%
Anoxia/Hypoxia	0	0.0%
Hereditary and developmental anomalies	0	0.0%
Mummification	0	0.0%
Stillbirth	0	0.0%
Perinatal mortality	0	0.0%
Placentitis	0	0.0%
Goitre	0	0.0%
Dystocia	0	0.0%
Bacteraemia/Septicaemia	0	0.0%
Weak calf syndrome	0	0.0%
Aspiration pneumonia	0	0.0%
Haemorrhage	0	0.0%
Miscellaneous causes	0	0.0%
No Diagnosis	0	0.0%

Table 4: The relative frequency of the diagnosed causes of death in ovine foetuses recorded on post-mortem examination by the RVLs during Quarter 4 of 2019 (n=5).

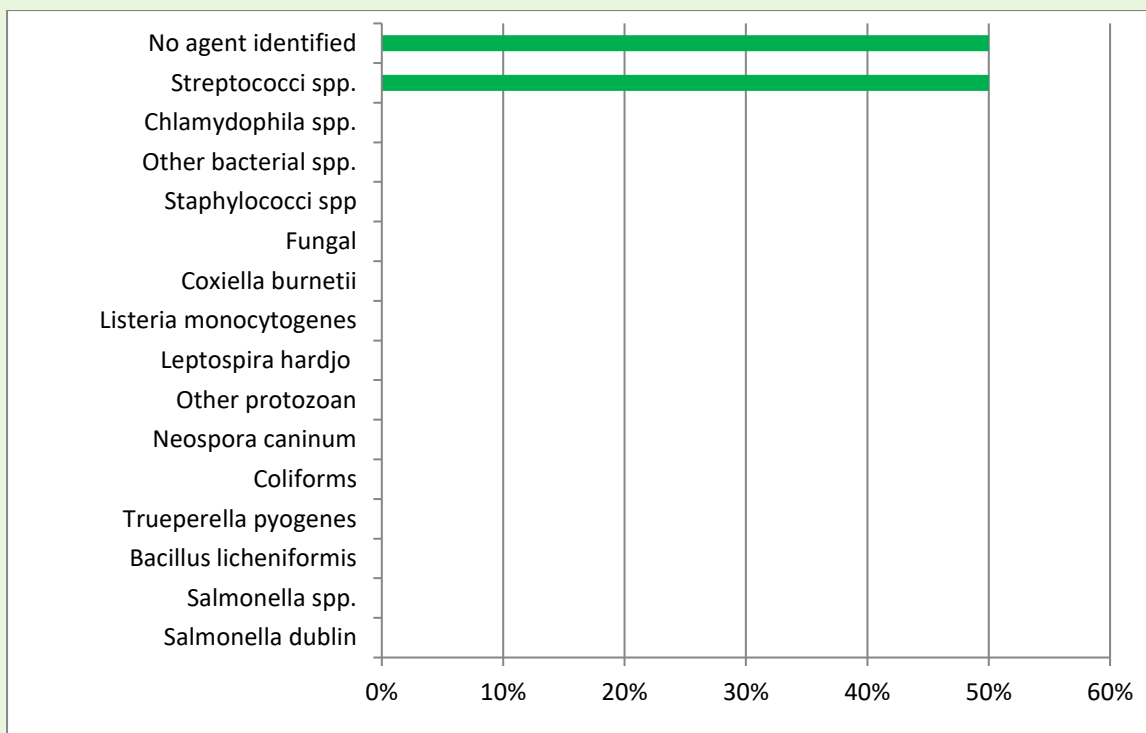


Figure 23: The relative frequency of abortion agents identified in ovine abortion diagnoses (n=4) recorded on post-mortem examination by the RVLs during Quarter 4 of 2019.