



**Department of Agriculture,
Food and the Marine
Laboratories Quarterly Surveillance Report
Quarter 2 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 second quarter of 2019 (April to June). The number of submissions recorded in this period was lower compared to the corresponding period in each of the three previous years, with a marked decrease from Q2 2018 to Q2 of 2019. Met Éireann data show that April and May of 2019 were warmer and drier than average. This would have allowed earlier turnout of livestock, with a consequent reduction in disease incidence. Higher than usual mortality in spring 2018, associated with a fodder shortage, may also be linked to the reduced number of carcasses submitted in Q2 of 2019. In both human and animal epidemiology, a period of increased mortality (e.g. due to a heatwave or epidemic) is often succeeded by a period of reduced mortality. The phenomenon has been explained by the idea that the old or those in poor health, who were “likely to die in the short term anyway”, are most affected by the underlying event, with resulting lower mortality after that event. This phenomenon is also known as a “forward shift in mortality” or as “the harvesting effect”. A similar pattern of reduced laboratory submissions was seen in spring 2014 following the period of increased mortality during the spring 2013 fodder crisis.

In cattle, the pattern of diagnoses for conditions affecting the alimentary tract is striking. Mesenteric torsion was recorded in a higher proportion of cases of alimentary tract disease compared to previous years. This was also true for rumenitis, a condition which often affects dairy calves. The Zinc Sulphate Turbidity (ZST) test results suggested that only 45% of calves (submitted dead) had adequate colostrum intake within the critical neonatal window for absorption. These results underline the need for DAFM, private veterinary practitioners, Teagasc, AHI and others to continue to raise awareness of the importance of proper colostrum management among cattle farmers. In sheep, pulpy kidney disease was by far the most commonly recorded clostridial disease, being responsible for the deaths of nineteen sheep examined in RVLs during the period. The ovine data also show that *Chlamydophila abortus* was the most commonly recorded cause of abortions in sheep, accounting for more than three times as many cases as the next most commonly recorded pathogen (*Toxoplasma gondii*), and continuing the pattern observed in the first quarter of the year.

The weather in Quarter 2 of 2019

Rainfall

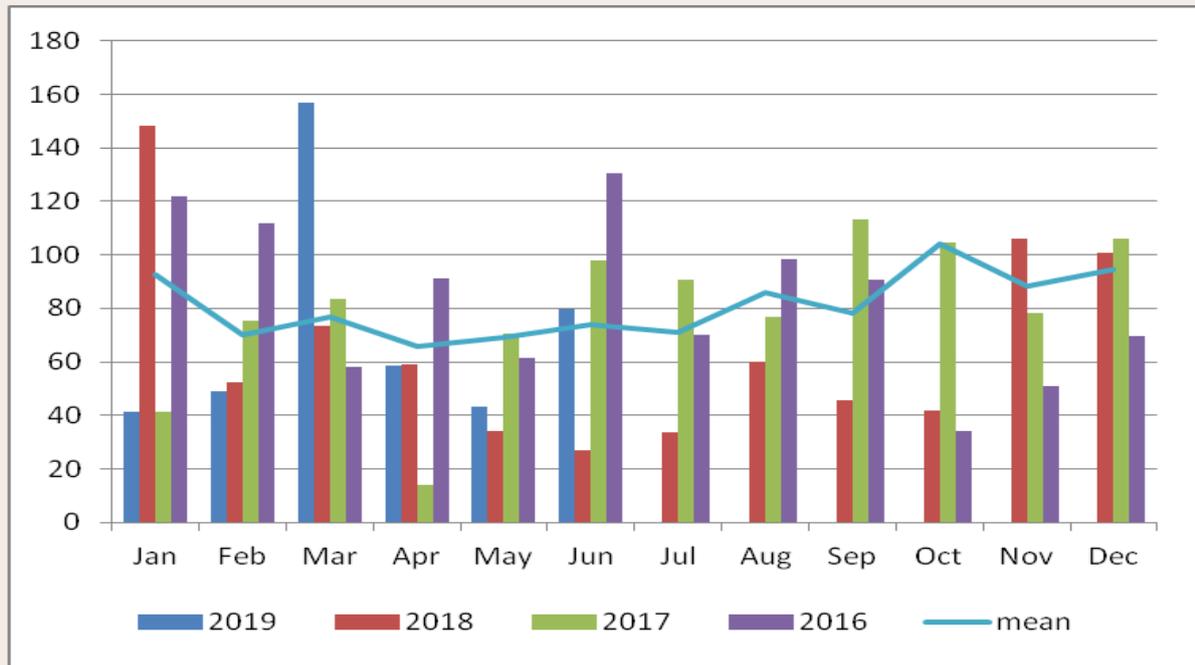


Figure 1: The average monthly rainfall (in millimetres) recorded for Quarter 2 of 2019 compared to the three previous years and the 30-year mean monthly rainfall (trend line). (Source: Met Eireann, www.met.ie).

Temperature

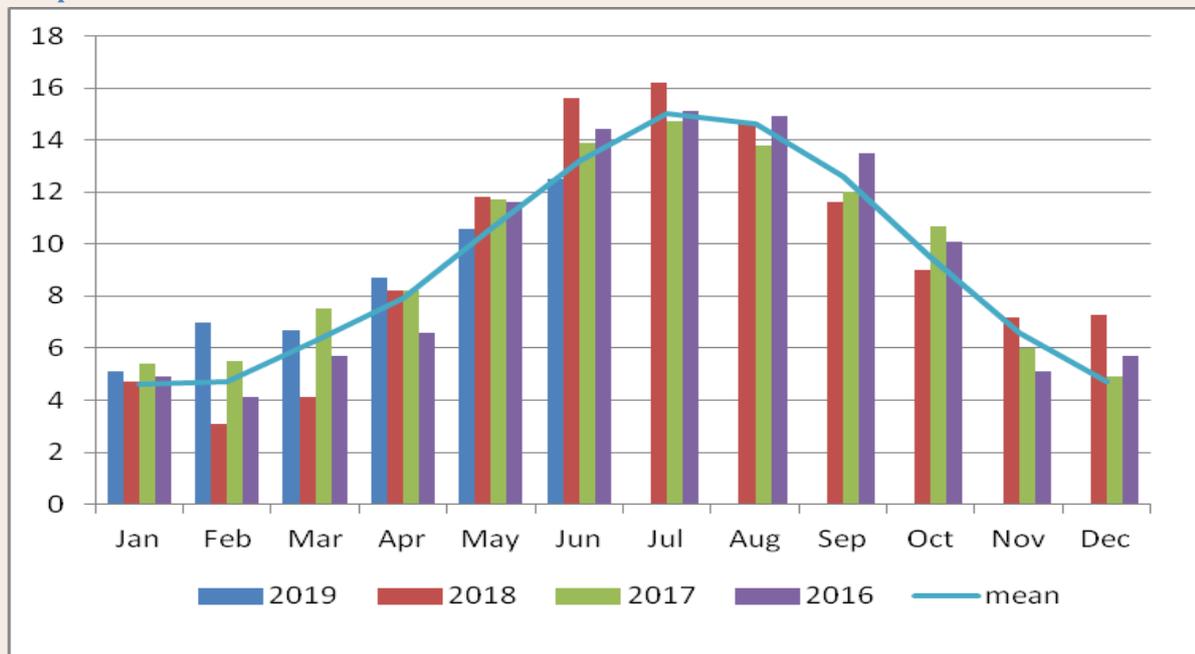


Figure 2: The mean monthly temperature (in degrees Celsius) for Quarter 2 of 2019 compared to the previous three years and the 30-year mean monthly temperature (trend line). (Source: Met Eireann www.met.ie).

Soil temperature

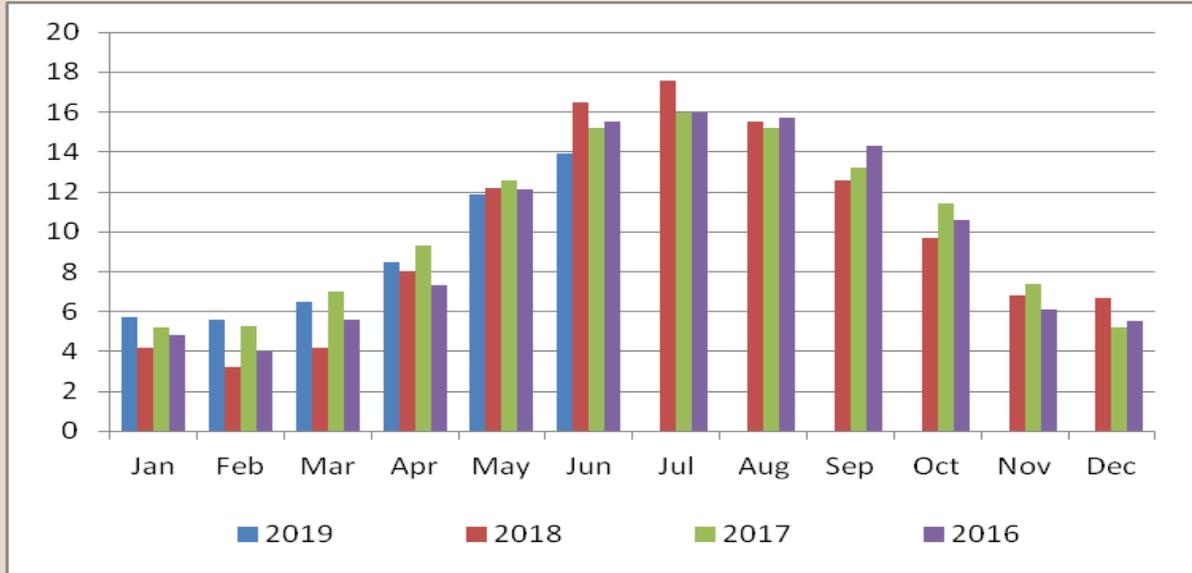


Figure 3: The mean monthly soil temperature (in degrees Celsius) for Quarter 2 of 2019 compared to the previous three years. (Source: Met Eireann www.met.ie).

Submission numbers to the RVLs in Quarter 2 of 2019

SPECIES	Carcass	Diagnostic	Foetus	Grand Total
Avian	111	135		246
Bovine	755	5644	109	6508
Cervine	16			16
Equine	8	44	2	54
Ovine	363	533	42	938
Porcine	104	22	2	128
Badger	73	3		76
Caprine	6	21		27
Exotic	6	10	1	17
Lagomorph	3	4		7
Porpoise	1			1
Dolphin	6			6
Grand Total	1452	6416	156	8024

Table 1: The submission numbers of carcasses, diagnostic samples and foetuses to the RVLs during Quarter 2 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)

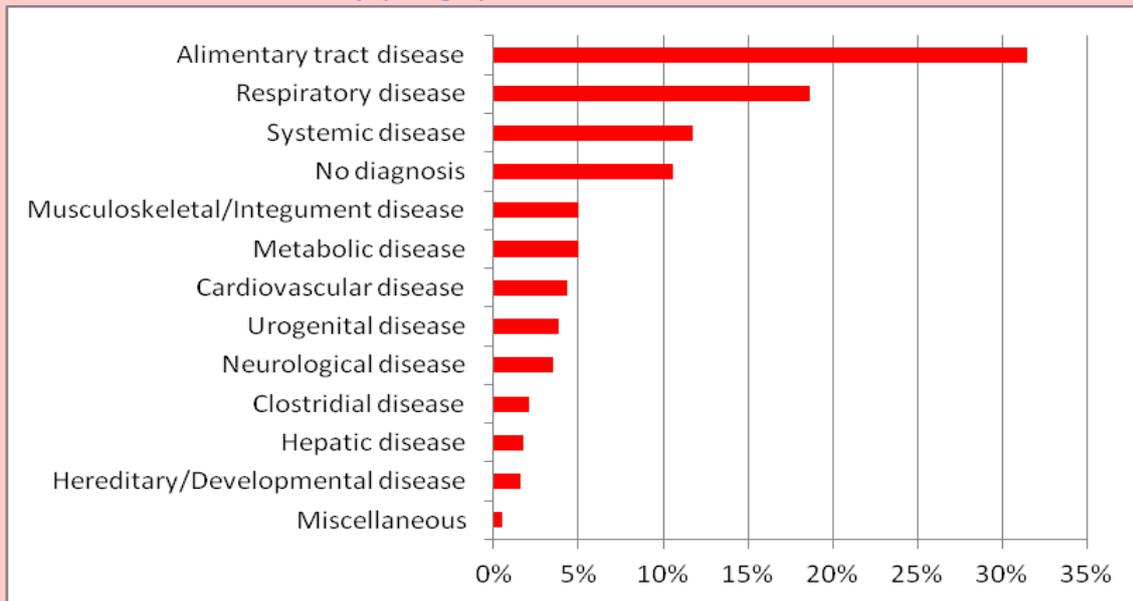


Figure 4: The causes of bovine mortality recorded on post-mortem examination in cattle of all ages by the RVLs, categorised by system or cause, during Quarter 2 of 2019 (n=627).

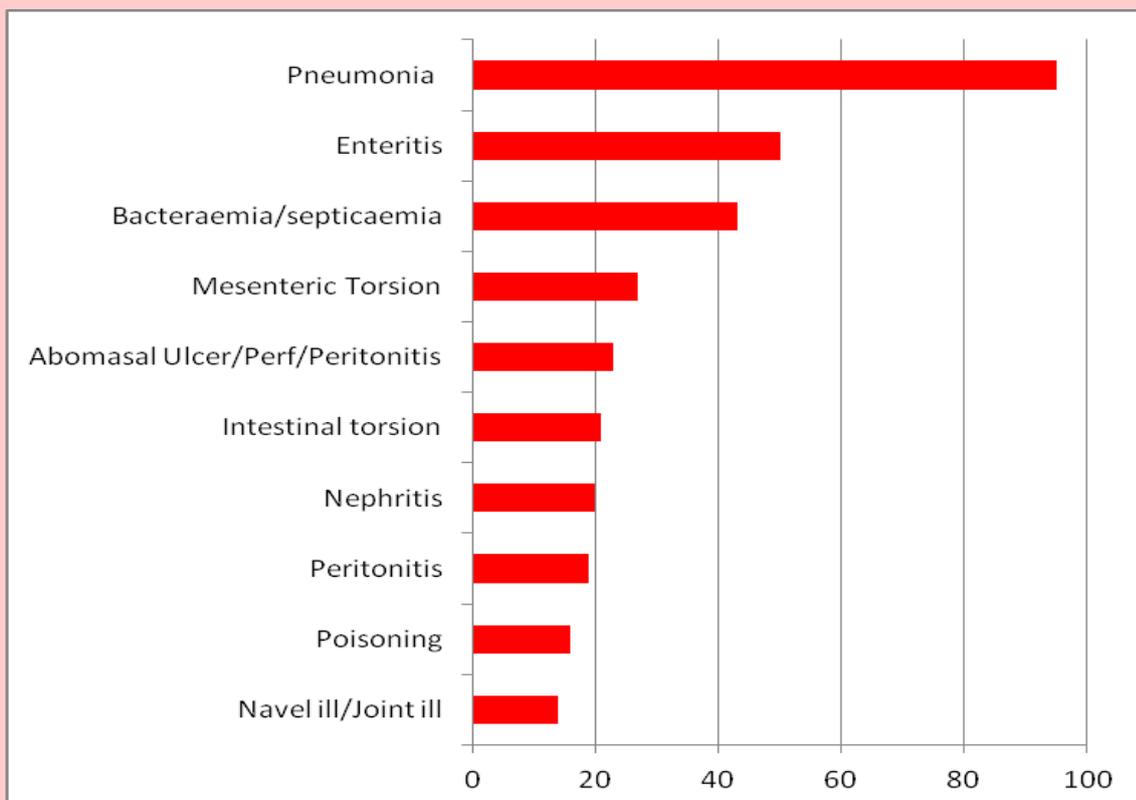


Figure 5: The ten most common individual diagnosed causes of death in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=627).

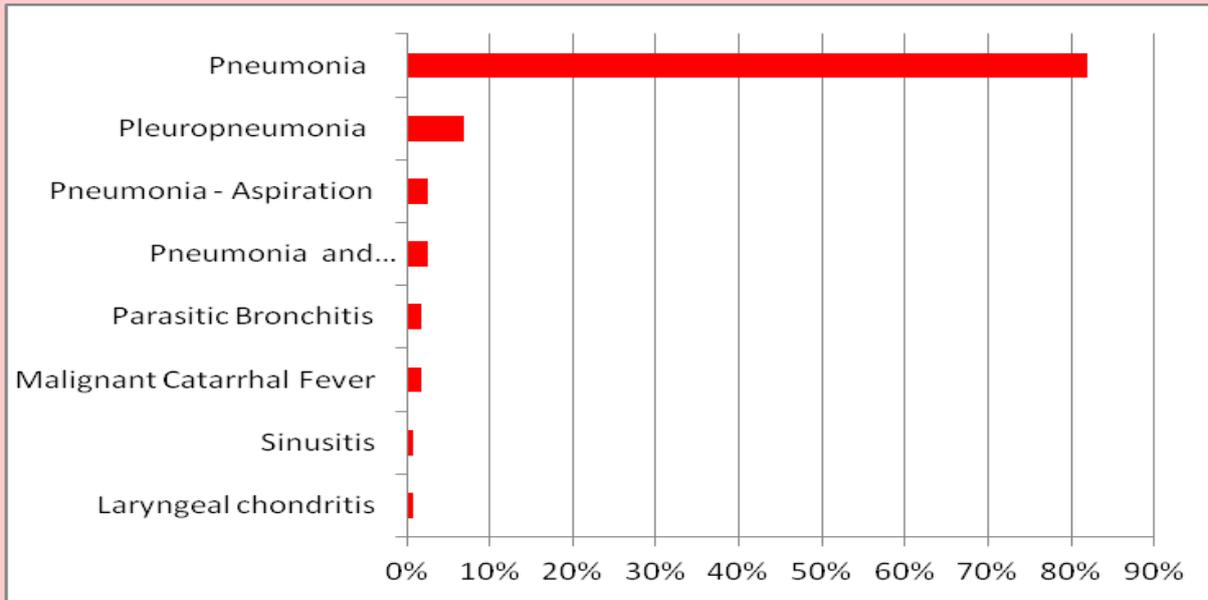


Figure 6: The relative frequency of the most common individual bovine respiratory disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=116).

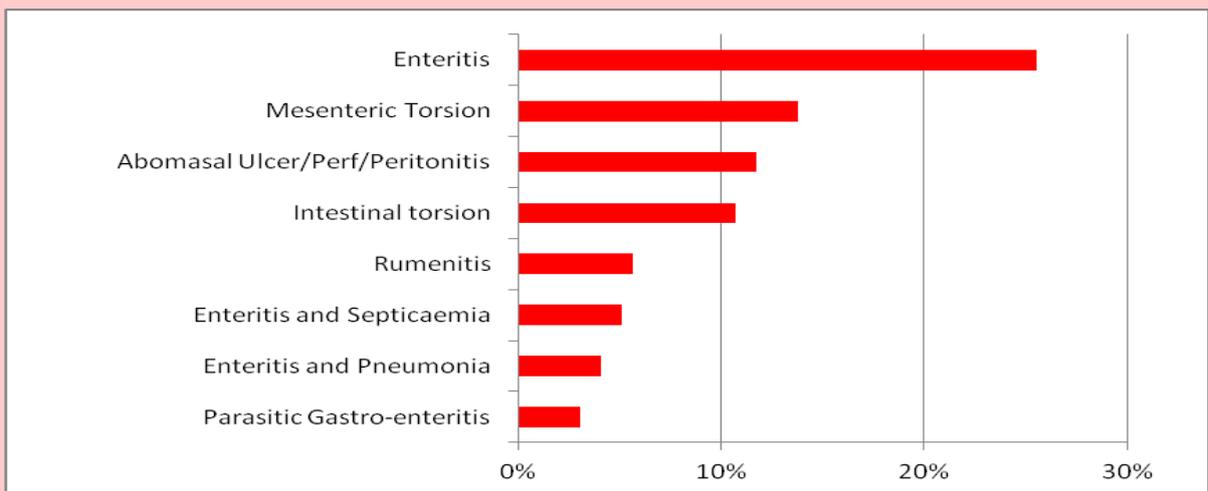


Figure 7: The relative frequency of the most common individual bovine alimentary tract disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=196).

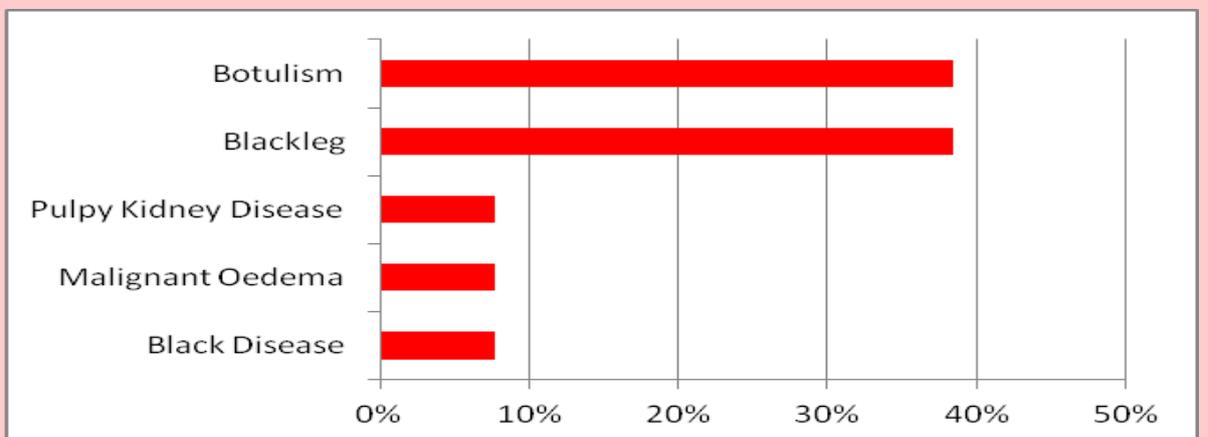


Figure 8: The relative frequency of bovine clostridial disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=13).

The causes of bovine mortality (age-specific)

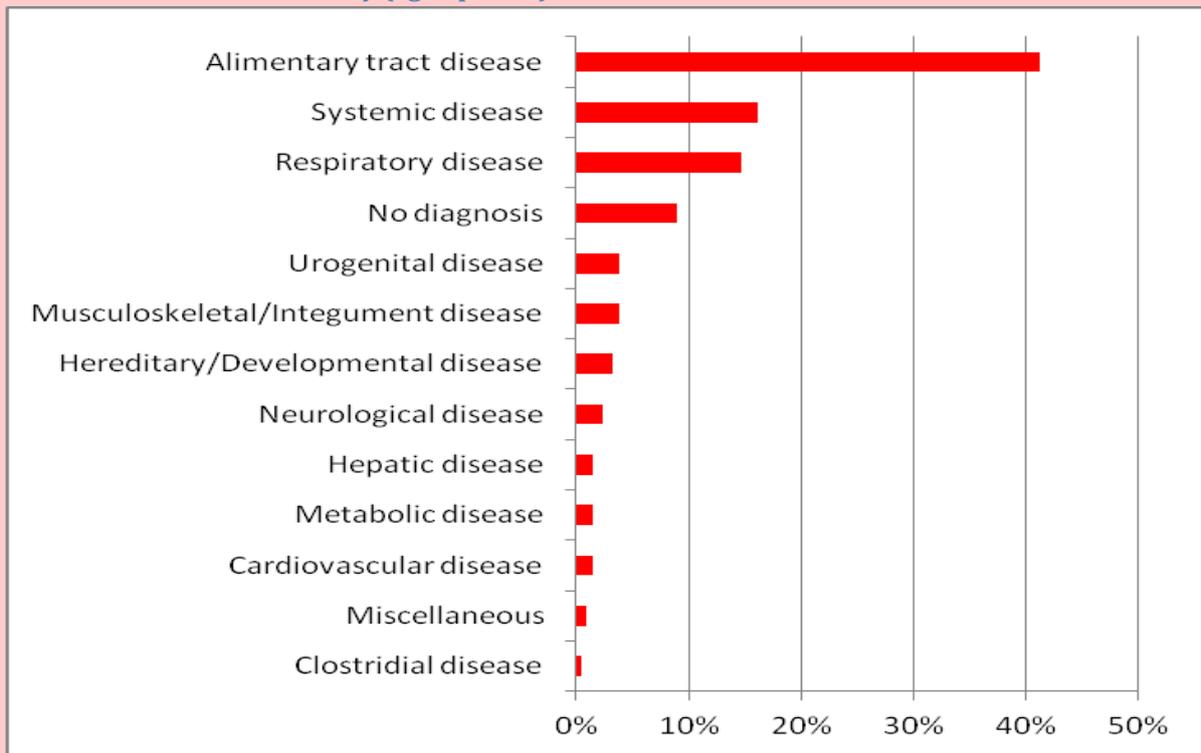


Figure 9: The causes of bovine mortality in neonatal calves (calves aged less than one month) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 2 of 2019 (n=211).

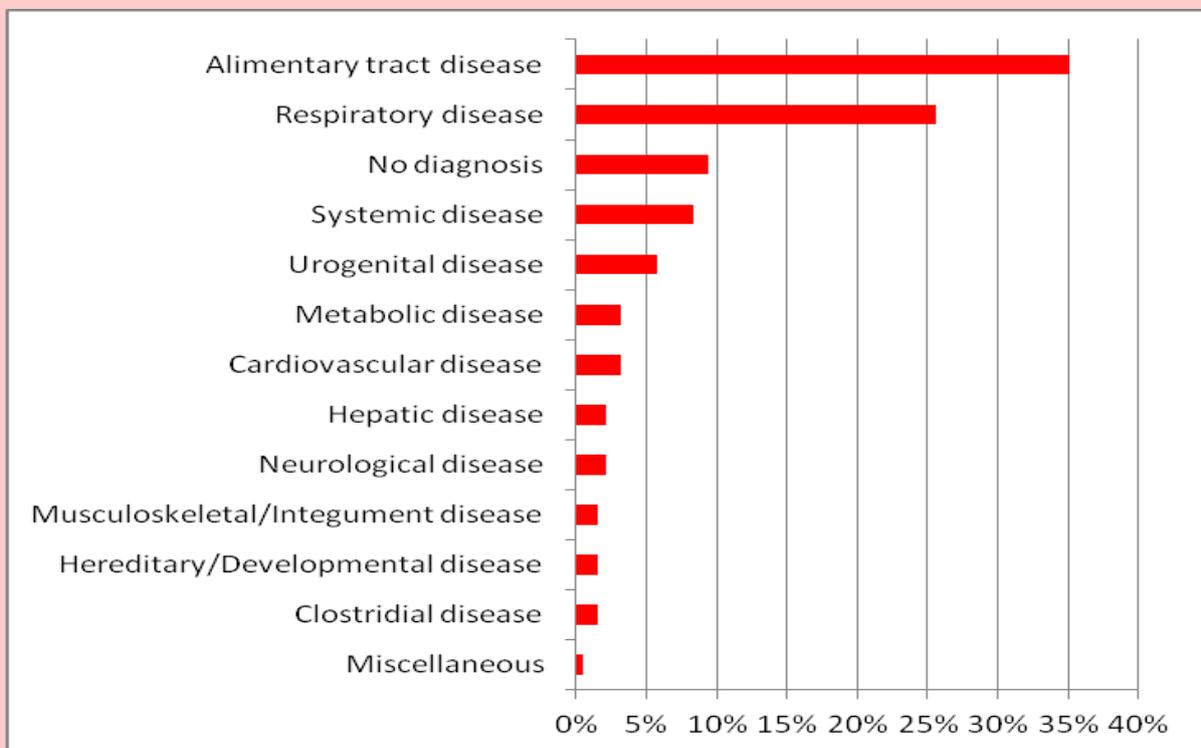


Figure 10: The causes of bovine mortality in calves (calves aged greater than one month but less than three months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 2 of 2019 (n=191).

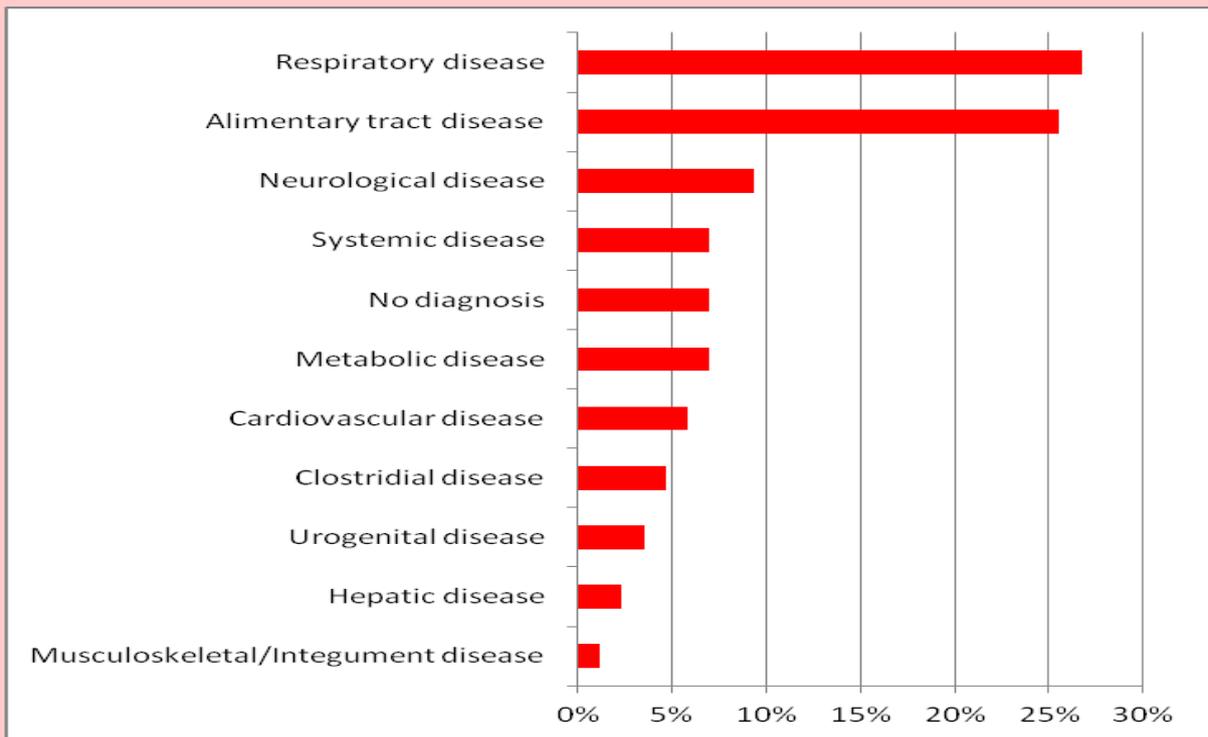


Figure 11: : The causes of bovine mortality in weanlings (bovine animals aged greater than three months but less than twelve months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 2 of 2019 (n=86).

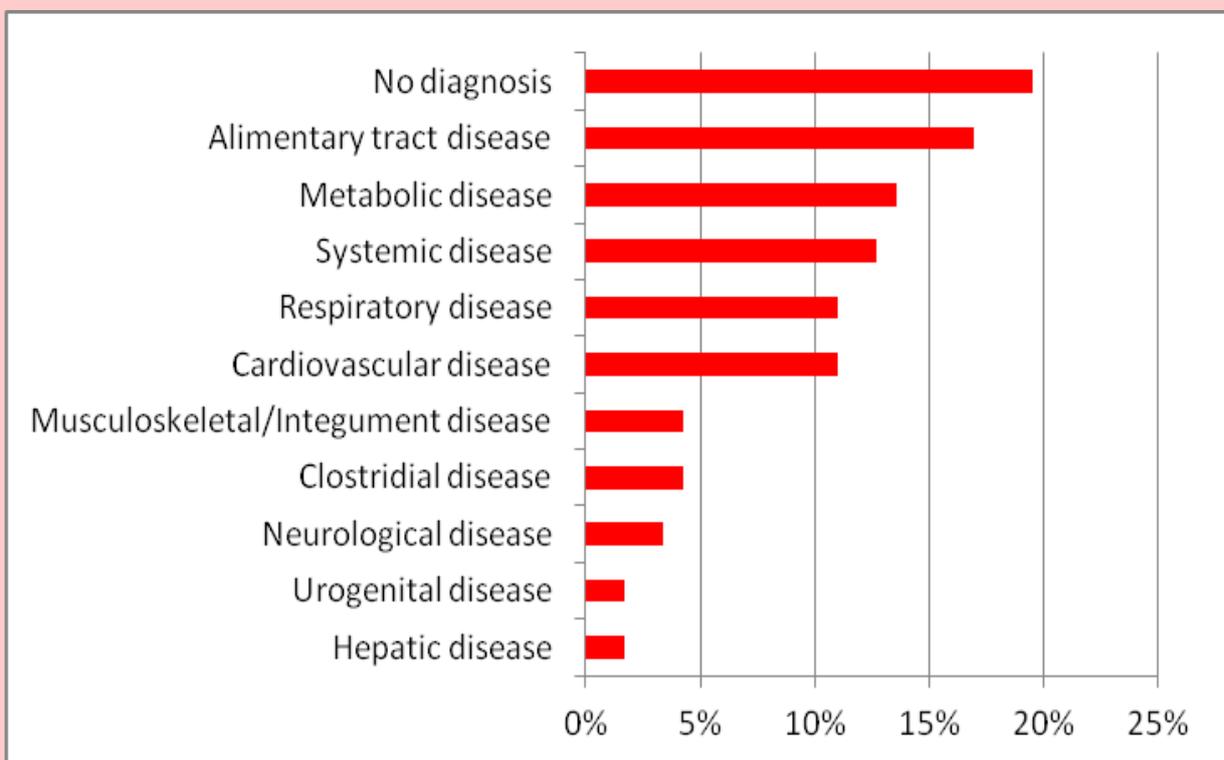


Figure 12: The causes of bovine mortality in adults (bovine animals aged greater than or equal to twelve months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 2 of 2019 (n=118).

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

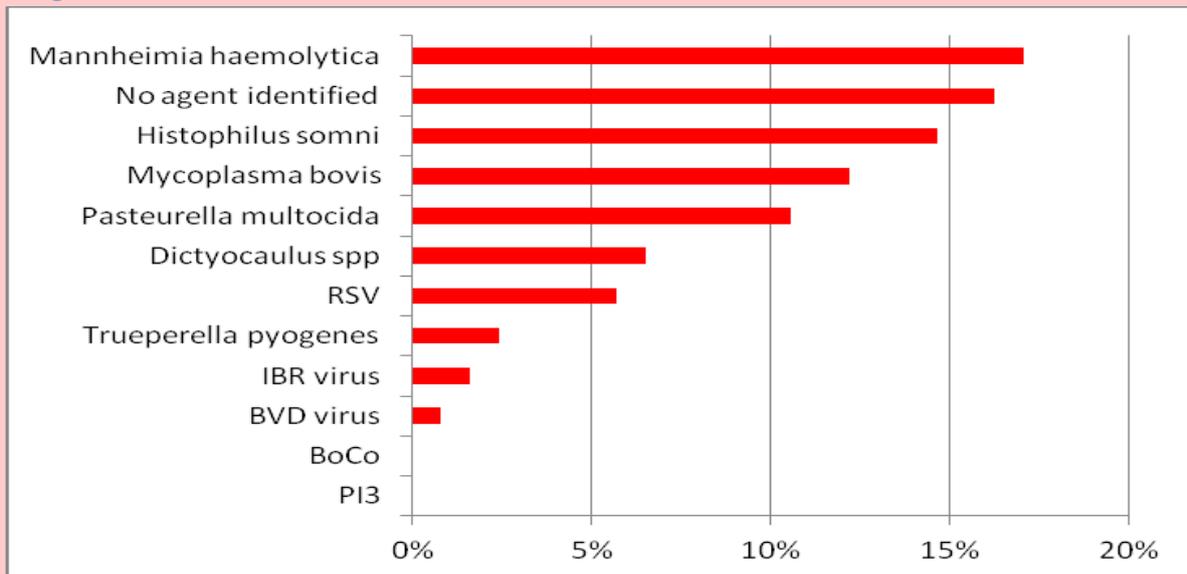


Figure 13: The relative frequency of specific respiratory pathogens identified in bovine carcasses examined on post-mortem examination by the RVLs, in which a diagnosis of respiratory disease was made during Quarter 2 of 2019 (n=123).

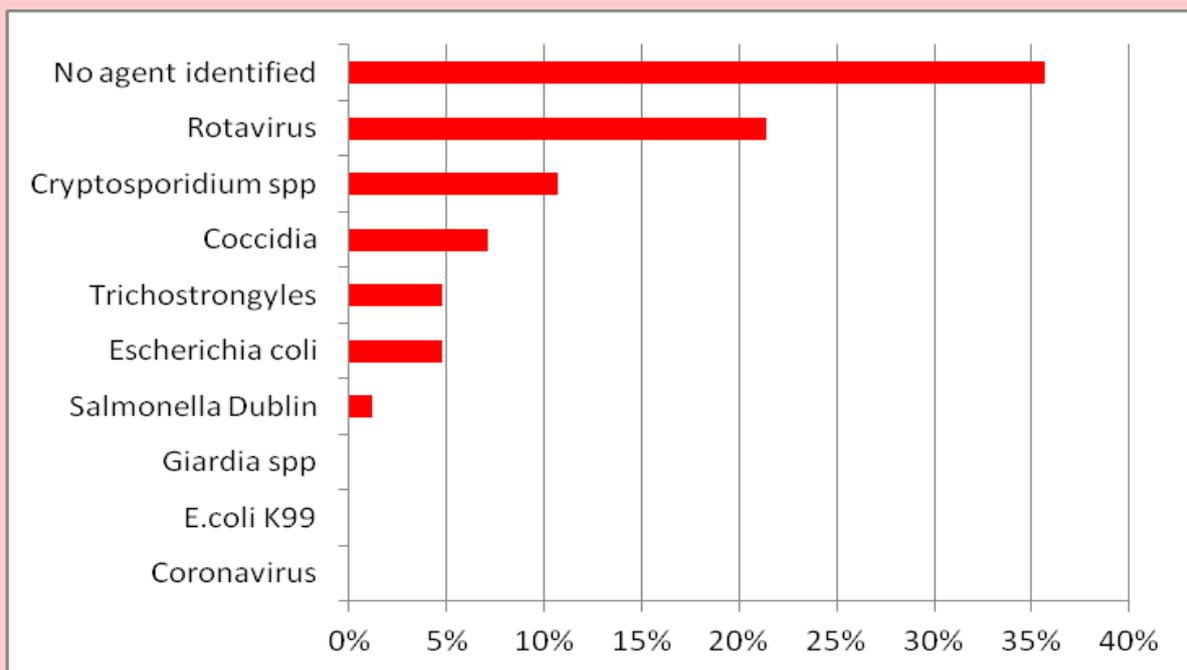


Figure 14: The relative frequency of specific alimentary tract disease pathogens identified in bovine carcasses examined on post-mortem examination by the RVLs, in which a diagnosis of 'enteritis' or 'gastro-enteritis' was made during Quarter 2 of 2019 (n=84).

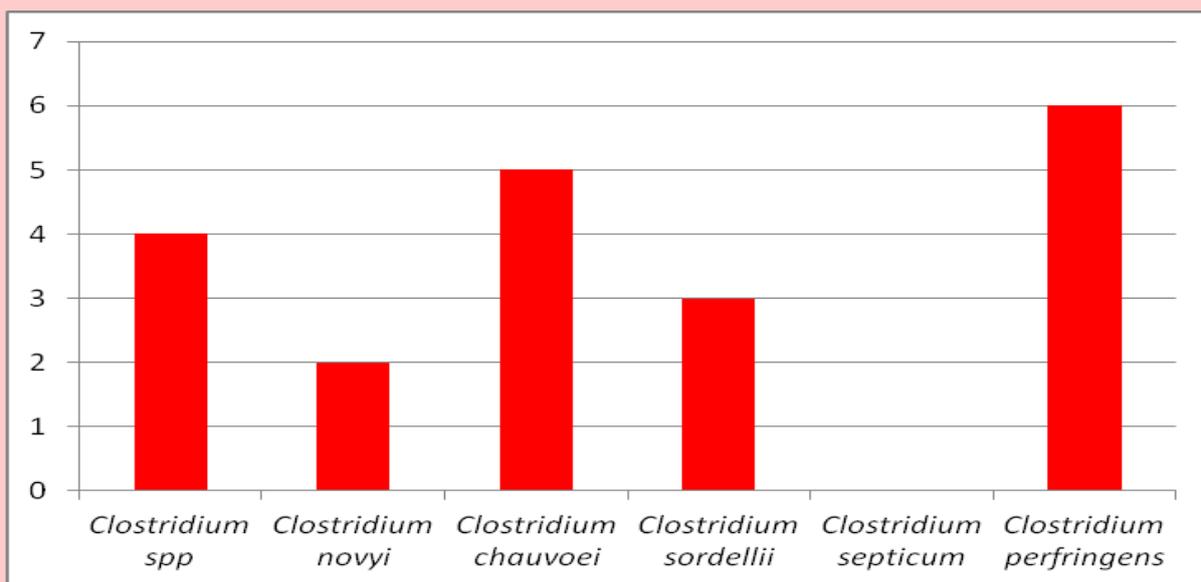


Figure 15: The frequency of identification of *Clostridium* species on post-mortem examination of bovine animal carcasses of all ages by the RVLs during Quarter 2 of 2019.

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

Enteric pathogen	Negative	Positive	%Positive
<i>E.coli</i> K99	314	2	0.6%
Coronavirus	418	2	0.5%
<i>Salmonella</i> culture	414	5	1.2%
<i>Cryptosporidium parvum</i>	352	70	16.6%
Rotavirus	307	112	26.7%

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 2 of 2019 from both 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

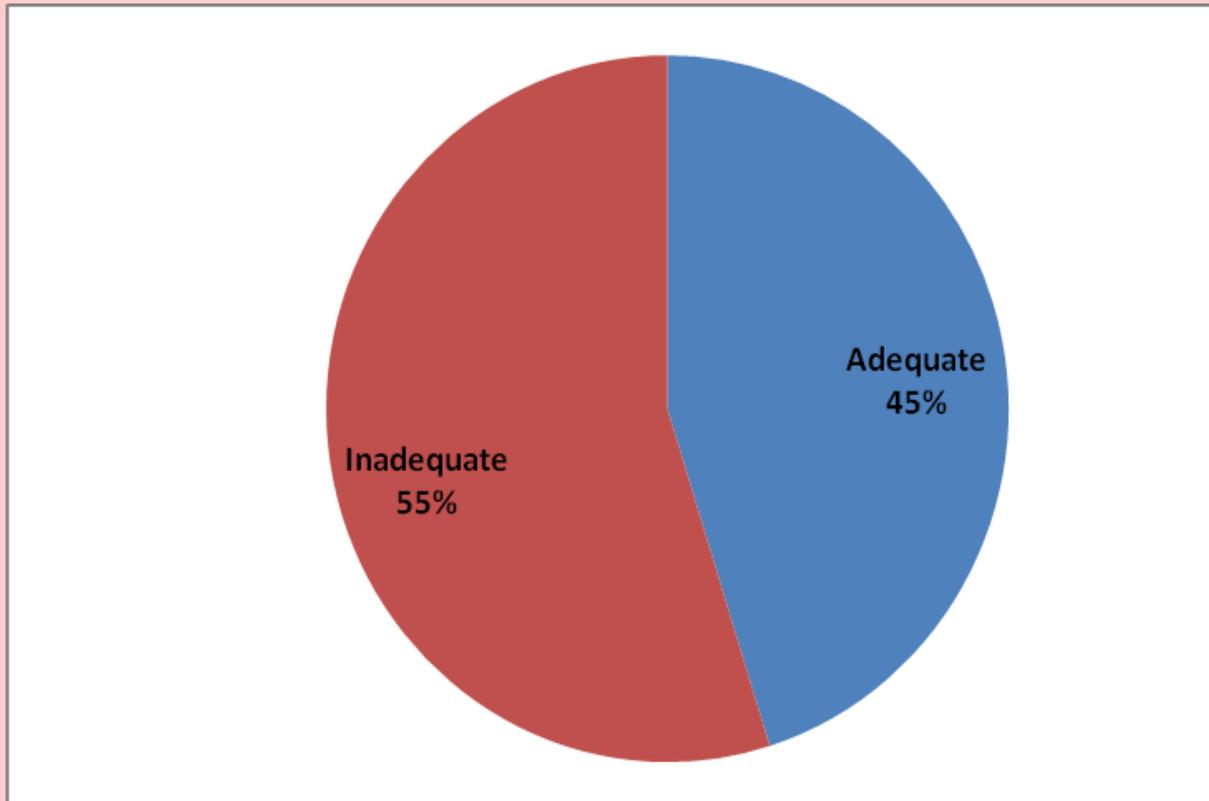


Figure 16: The results of the ZST tests performed on both clinically ill animals and on carcasses submitted for post-mortem examination by the RVLs during Quarter 2 of 2019 (n=176). The ZST test is used to determine the immunoglobulin status of the calf which can reflect the extent to which maternal colostral 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

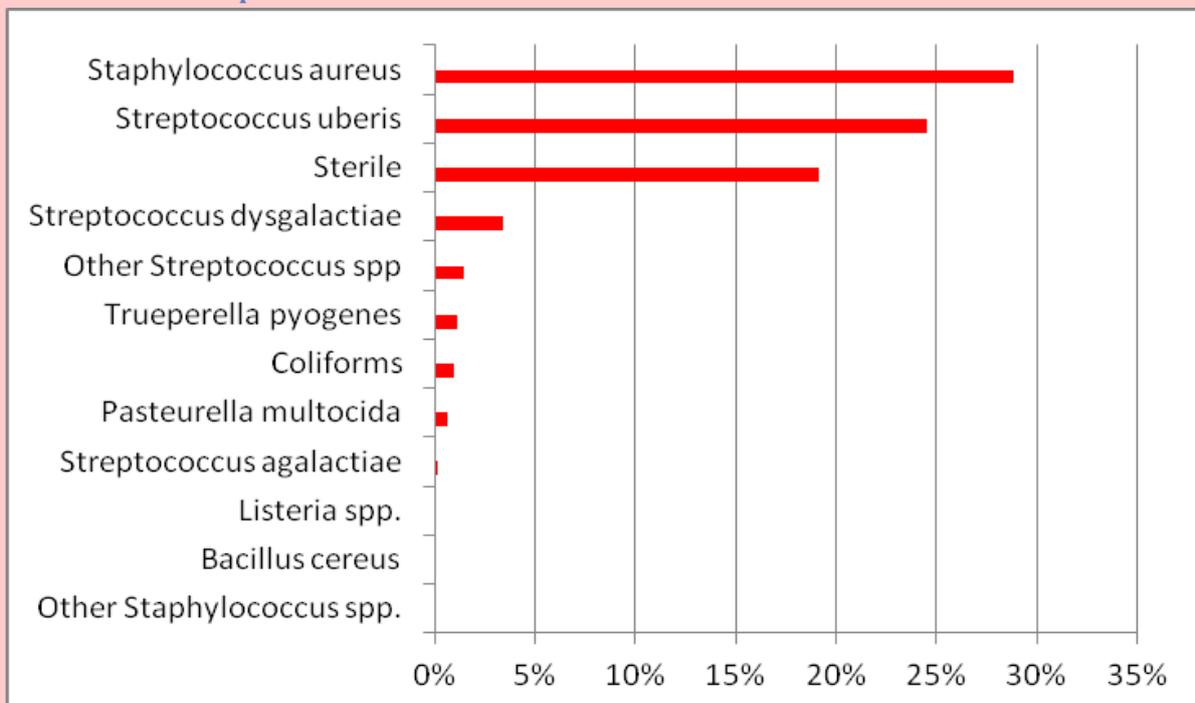


Figure 17: The relative frequency of isolation of specific mastitis pathogens in milk sample submissions (n=616) for bacteriological culture by the RVLs during Quarter 2 of 2019.

Bovine abortion and perinatal death

Foetal diagnosis	Number	Percentage
Abortion	42	45.2%
Anoxia/Hypoxia	2	2.2%
Hereditary and developmental anomalies	7	7.5%
Mummification	1	1.1%
Stillbirth	0	0.0%
Perinatal mortality	5	5.4%
Placentitis	3	3.2%
Goitre	0	0.0%
Dystocia	8	8.6%
Bacteraemia/Septicaemia	3	3.2%
Weak calf syndrome	0	0.0%
Aspiration pneumonia	0	0.0%
Haemorrhage	0	0.0%
Miscellaneous causes	19	20.4%
No Diagnosis	3	3.2%
	93	

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=93) by the RVLs during Quarter 2 of 2019.

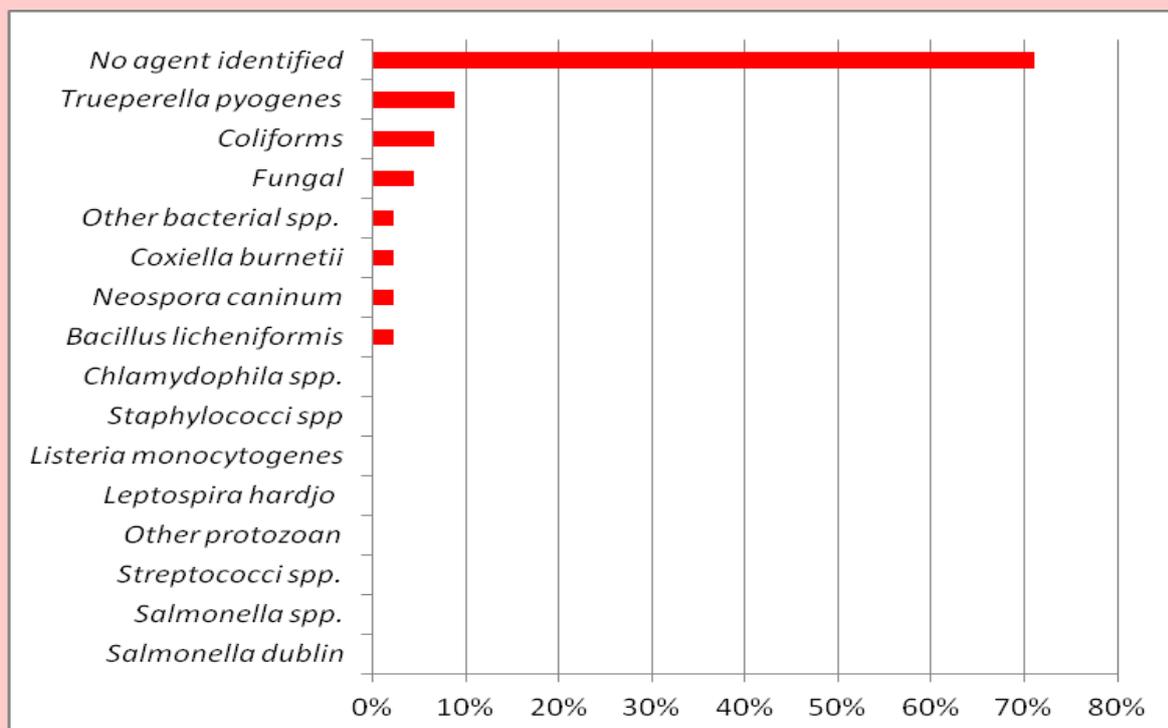


Figure 18: The relative frequency of detection of infectious agents in fetuses submitted to the RVLs for post-mortem examination during Quarter 2 of 2019 in which abortion, stillbirth or placentitis were diagnosed (n=45).

Ovine disease surveillance

Causes of ovine mortality

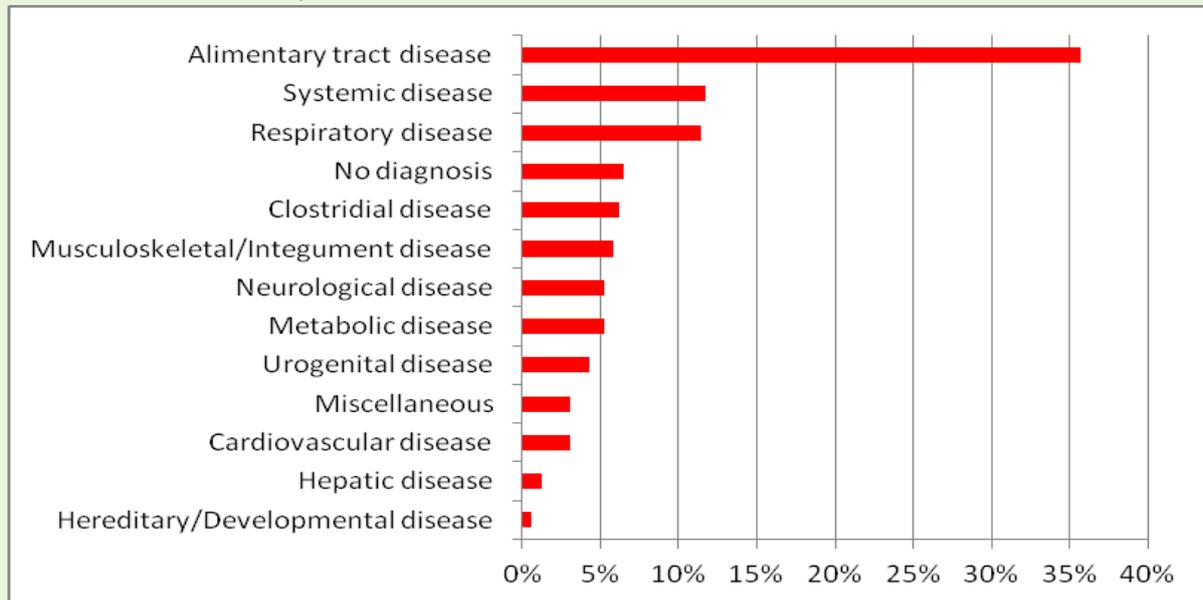


Figure 19: The causes of mortality in sheep carcasses recorded on post-mortem examination by the RVLs during Quarter 2 of 2019, categorised by the system affected or by cause (n=328).

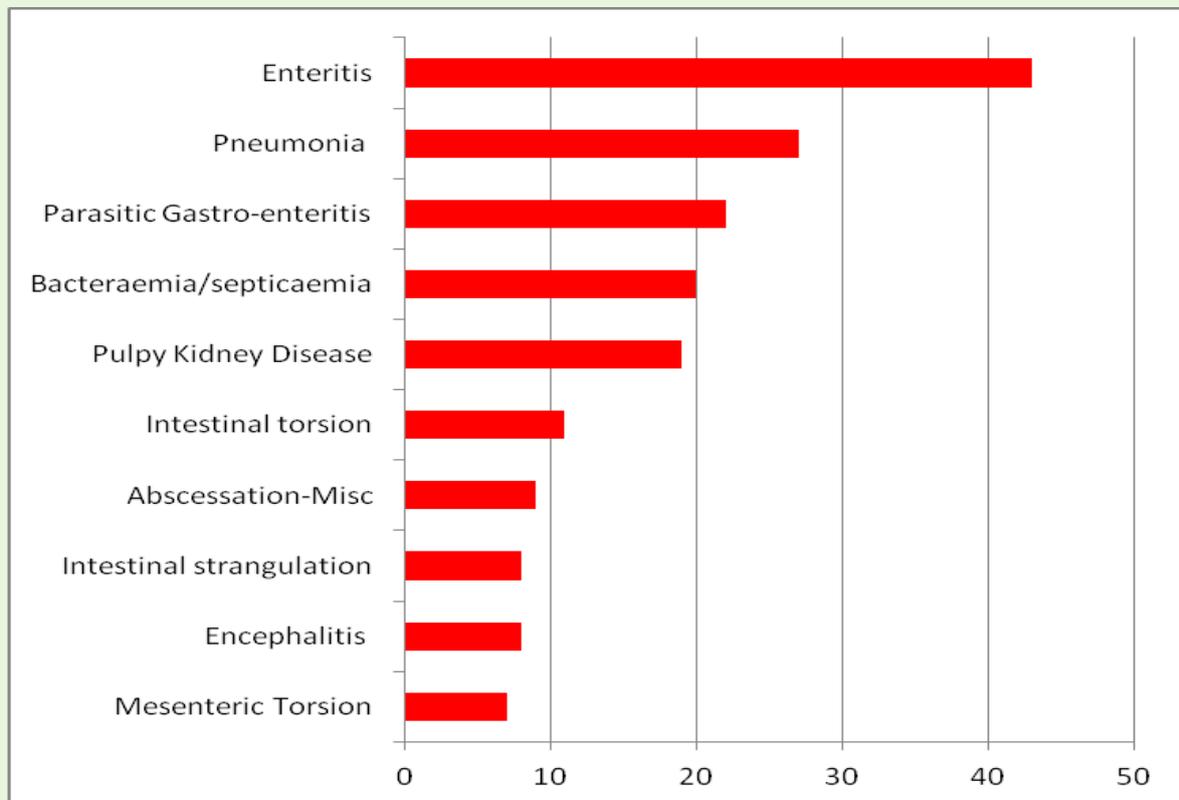


Figure 20: The ten most common individual diagnoses recorded in sheep carcasses on post-mortem examination by the RVLs during Quarter 2 of 2019

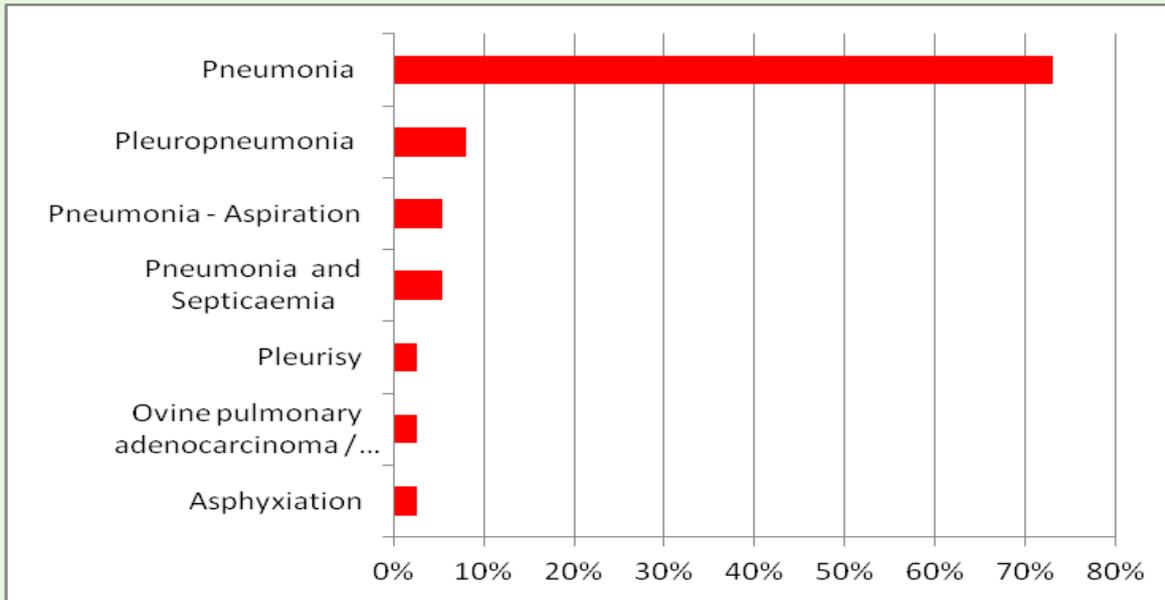


Figure 21: The relative frequency of respiratory disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=36).

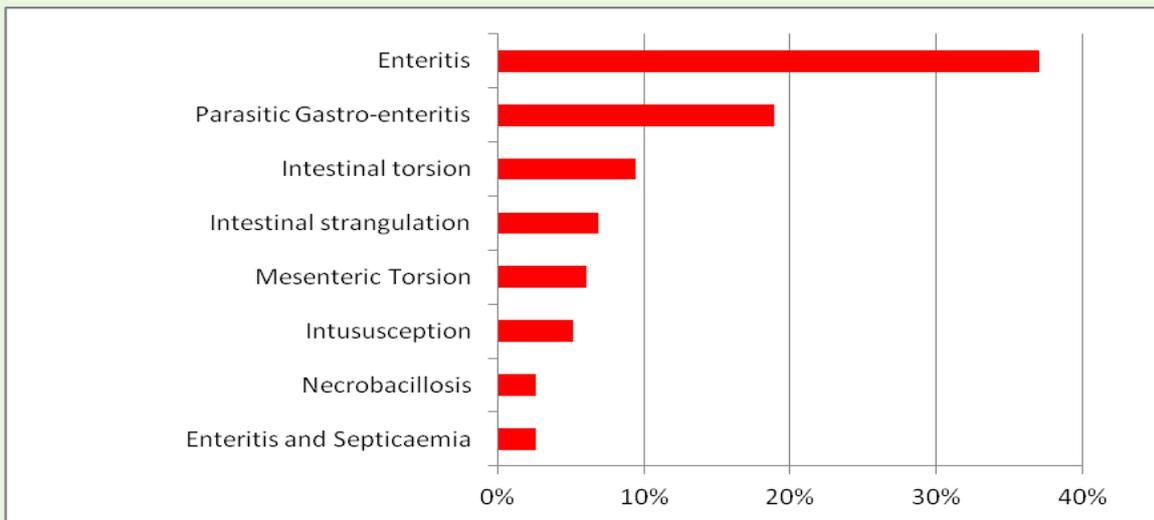


Figure 22: The relative frequency of alimentary tract disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=117).

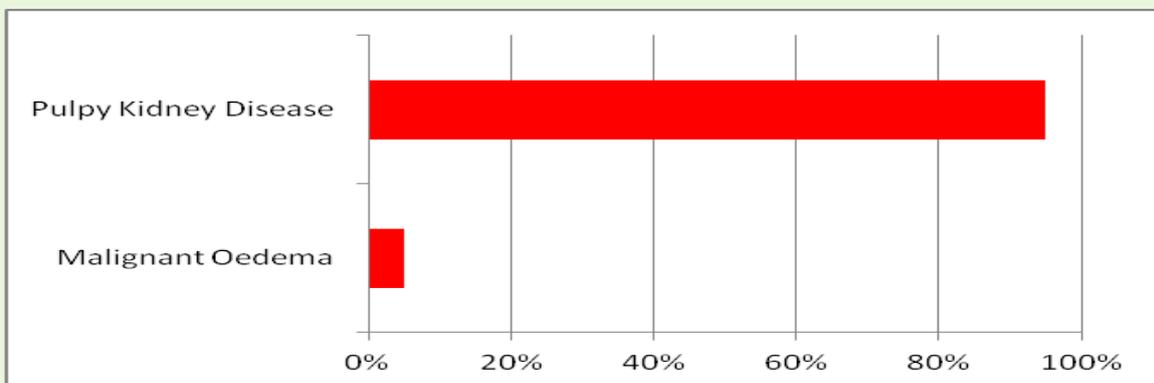


Figure 23: The relative frequency of clostridial disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=20).

Ovine abortion

Diagnosed cause of foetal death	Number	Percentage
Abortion	28	75.7%
Miscellaneous causes	6	16.2%
No Diagnosis	2	5.4%
Hereditary and developmental anomalies	1	2.7%
Bacteraemia/Septicaemia	0	0.0%
Dystocia	0	0.0%
Goitre	0	0.0%
Placentitis	0	0.0%
Perinatal mortality	0	0.0%
Mummification	0	0.0%
Anoxia/Hypoxia	0	0.0%
	37	

Table 4: The relative frequency of the diagnosed causes of death in ovine foetuses recorded on post-mortem examination by the RVLs during Quarter 2 of 2019 (n=37).

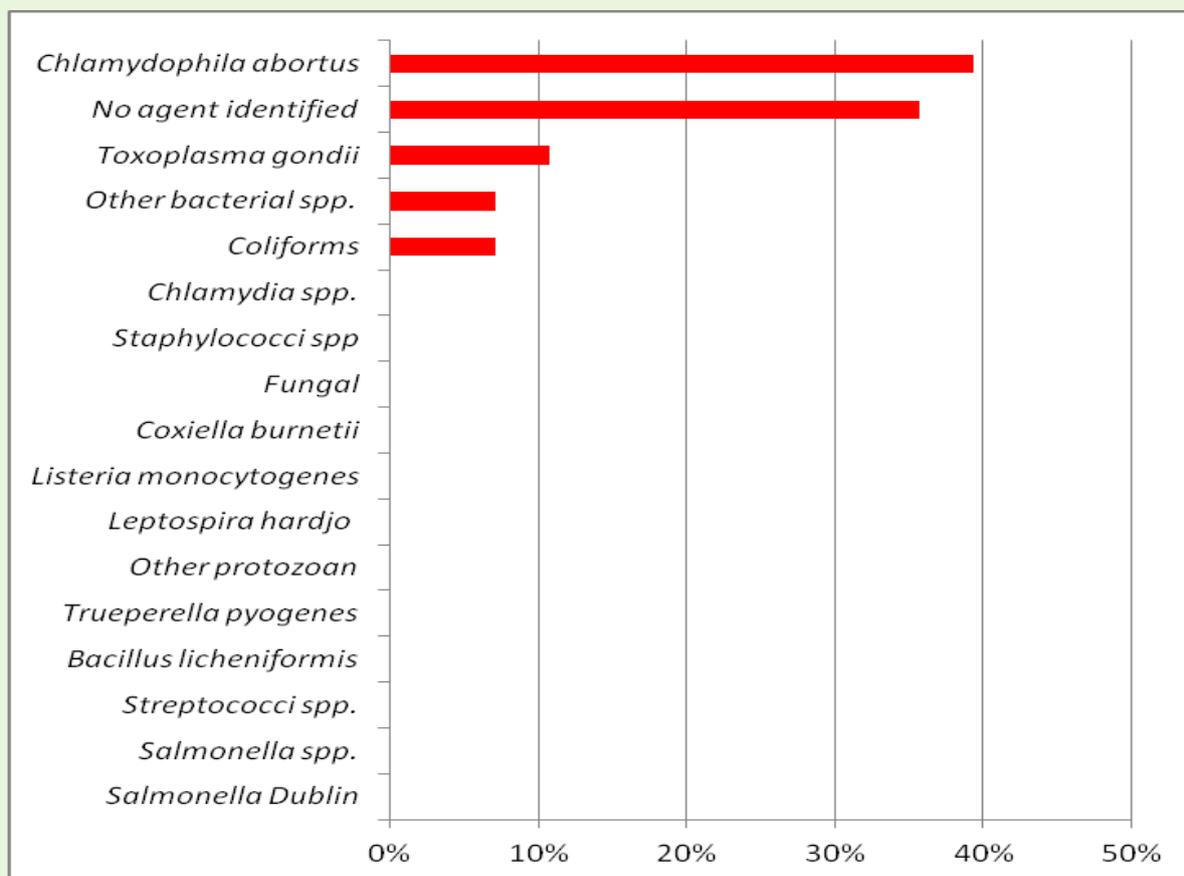


Figure 24: The relative frequency of abortion agents identified in ovine abortion diagnoses (n=28) recorded on post-mortem examination by the RVLs during Quarter 2 of 2019.