Department of Agriculture,

Food and the Marine

Laboratories Quarterly Surveillance Report

Quarter 1 2019

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

Introduction

The 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 is 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 compliments 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 refers to the first quarter of 2019 (January to March). The number of submissions recorded in this period was quite low compared to the same period in each of the three previous years. This decrease in submissions may be linked to weather conditions. Met Eireann data show that January and February of 2019 were substantially warmer and drier than the historical average. Good ground conditions and early grass growth may have allowed some livestock to be kept outdoors rather than housed during this time. Outdoor management of livestock, where conditions are suitable, tends to lead to a lower incidence of a wide range of common diseases. The low incidence of liver fluke this winter is also likely to have contributed substantially to the reduction in submissions for grazing animals, especially in the case of sheep.

In cattle, pathogens of the respiratory tract and the alimentary tract were present in roughly expected proportions when the situation for the same period of previous years was taken into account. Respiratory syncytial virus (RSV) appears to have become a more common finding in cases of bovine respiratory disease over the past few years. As in quarter 1 of 2018, *Mannheimia Haemolytica* was the most commonly identified agent in bovine respiratory disease cases. Rotavirus remained the most commonly identified alimentary tract pathogen in bovine carcases.

In sheep, the very low incidence of liver fluke recorded in quarter 4 of 2018 continued into this quarter, and once more, the list of common individual diagnoses for ovine death does not include liver fluke. However, parasitic gastroenteritis (PGE) was the fifth most common diagnosis in sheep, and the most common ovine alimentary tract disease diagnosed. This seems to confirm what science would suggest- that the prevalence of roundworms has not been affected by last year's fine weather in the same way as the prevalence of liver fluke. Farmers and vets should avoid complacency when considering whether to take appropriate measures to treat or prevent PGE. Another notable finding on ovine submissions was that *Toxoplasma gondii* was responsible for roughly twice as many abortions as *Chlamydophila abortus* (the agent responsible for enzootic abortion of ewes).

The weather in Quarter 1 2019

Rainfall

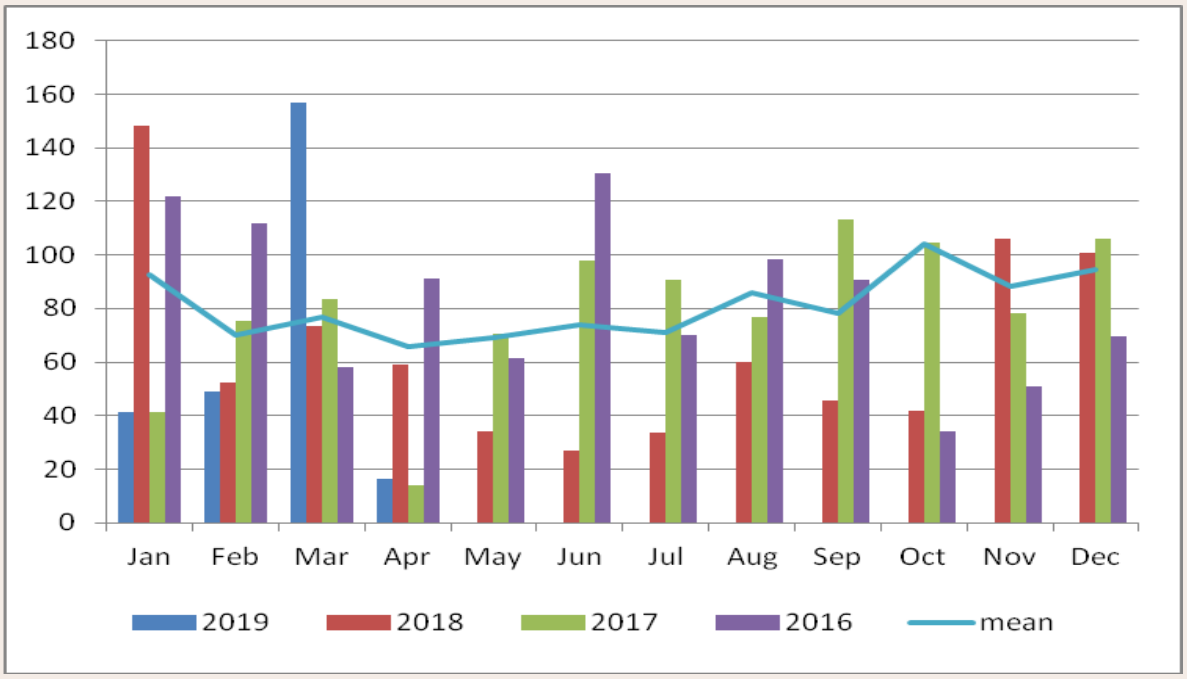

Figure 1: The average monthly rainfall (in millimetres) recorded for Quarter 1 2019 compared to the three previous years and the 30-year mean monthly rainfall (trend line). (Source: Met Eireann, www.met.ie).

Temperature

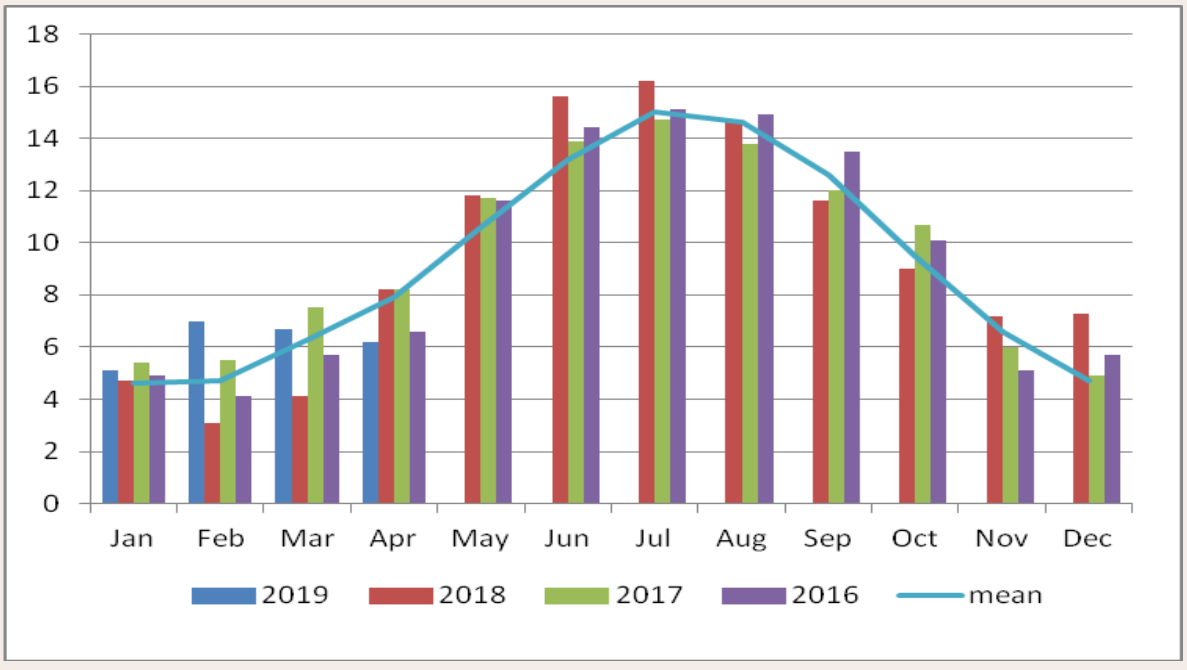

Figure 2: The mean monthly temperature (in degrees Celsius) for Quarter 1 2019 compared to the previous three years and the 30-year mean monthly temperature (trend line). (Source: Met Eireann www.met.ie).

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Soil temperature

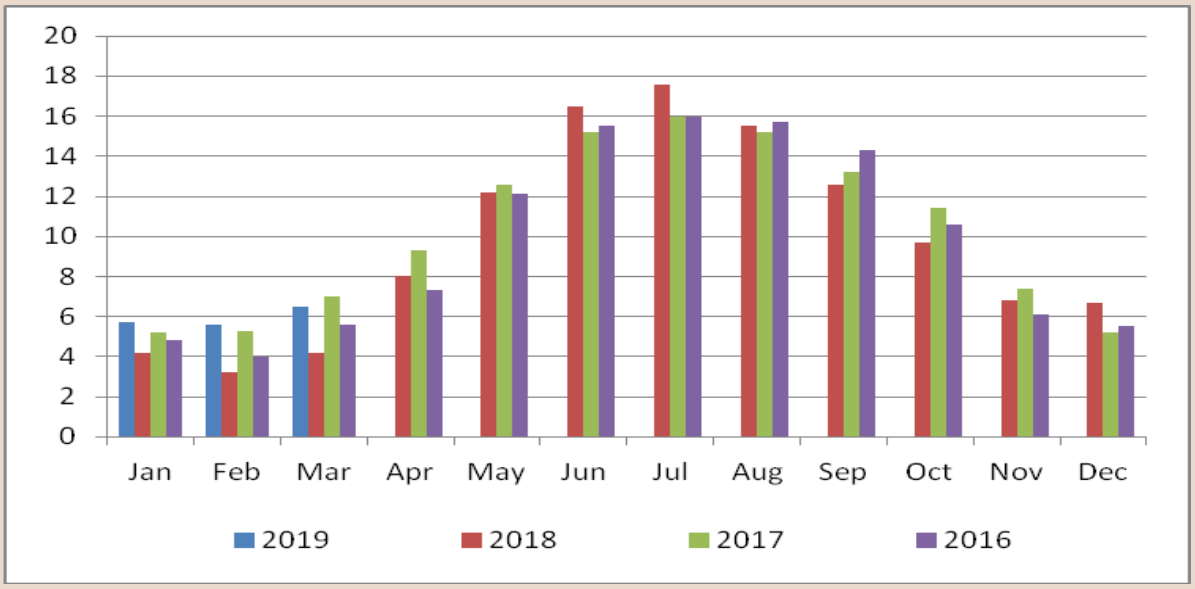

Figure 3: **The mean monthly soil temperature (in degrees Celsius) for Quarter 1 2019 compared to the previous three years. (Source: Met Eireann www.met.ie).**

Submission numbers to the RVLs in Quarter 1 2019

SPECIES	Carcass	Diagnostic	Foetus	Grand Total
Avian	73	83		156
Bovine	629	6697	859	8185
Canine	5	44		49
Cervine	142	2		144
Equine	1	59	3	63
Ovine	370	557	396	1323
Porcine	46	17	3	66
Badger	137	2		139
Caprine	10	12	4	26
Exotic	14	15		29
Vulpine	16			16
Lagomorph	1			1
Dolphin	25			25
Porpoise	5			5
Reptile		1		1
Grand Total	1474	7489	1265	10228

Table 1: The submission numbers of carcases, diagnostic samples and foetuses to the RVLs during Quarter 1 2019. Note that figures refer to sample numbers – one carcase or foetus counts as one sample under the carcase 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)

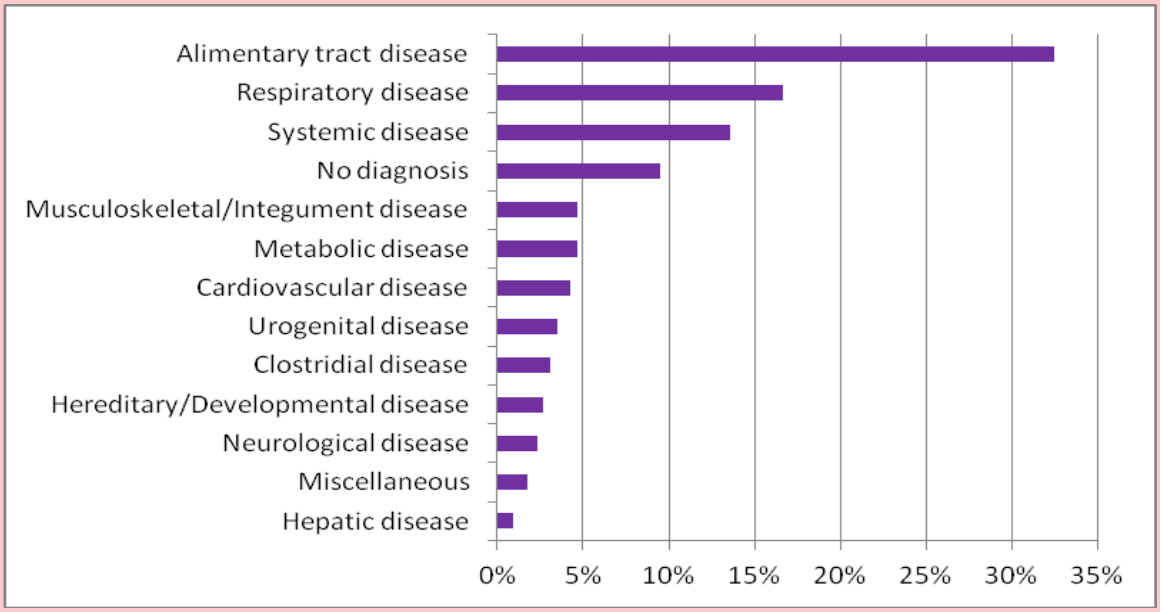

Figure 4: The causes of bovine mortality recorded on post-mortem examination in cattle of all ages by the RVLs, categorised by system or cause, during Quarter 1 2019 (n=517).

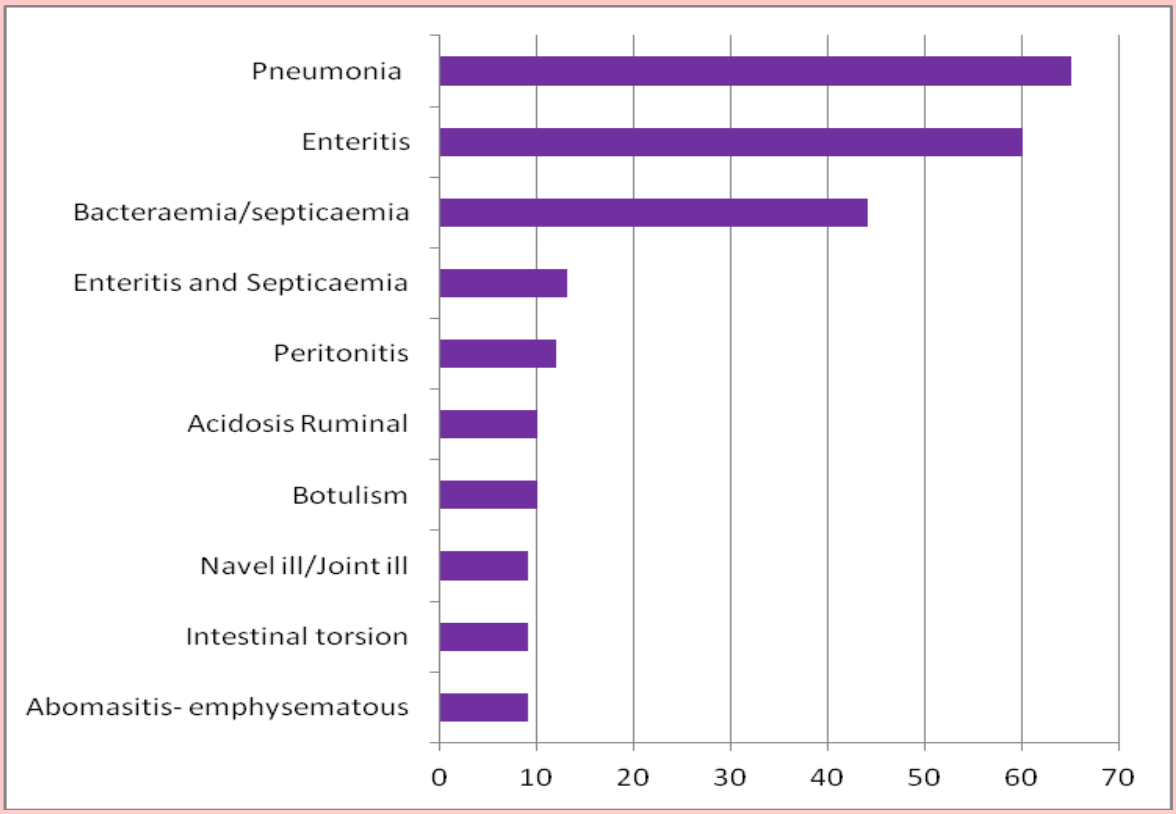

Figure 5: The ten most common individual diagnosed causes of death in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=517).

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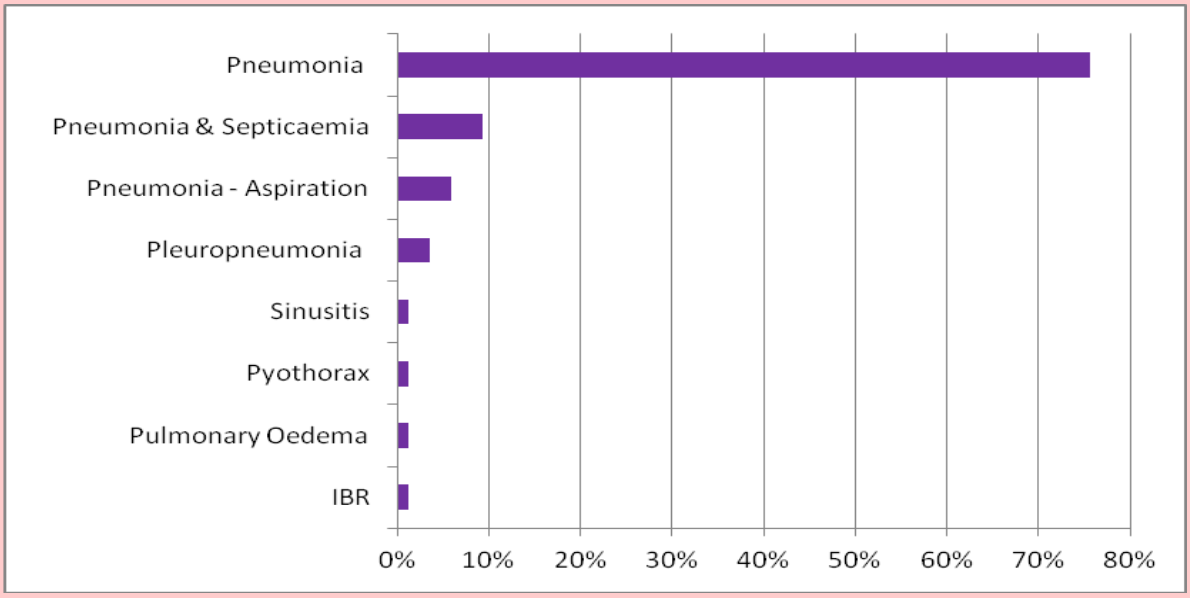

Figure 6: **The relative frequency of the most common individual bovine respiratory disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=86).**

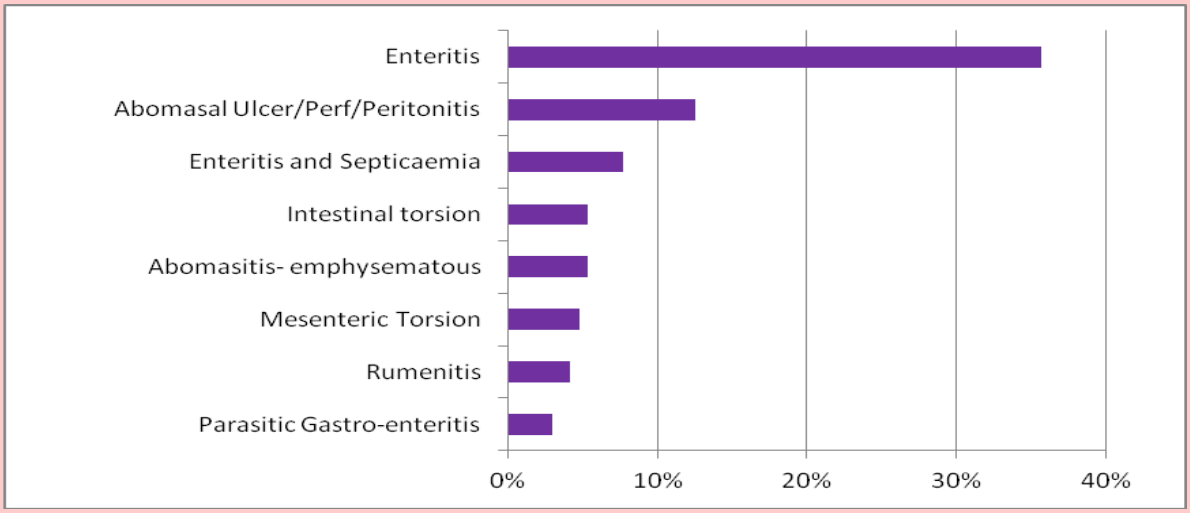

Figure 7: The relative frequency of the most common individual bovine alimentary tract disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=168).

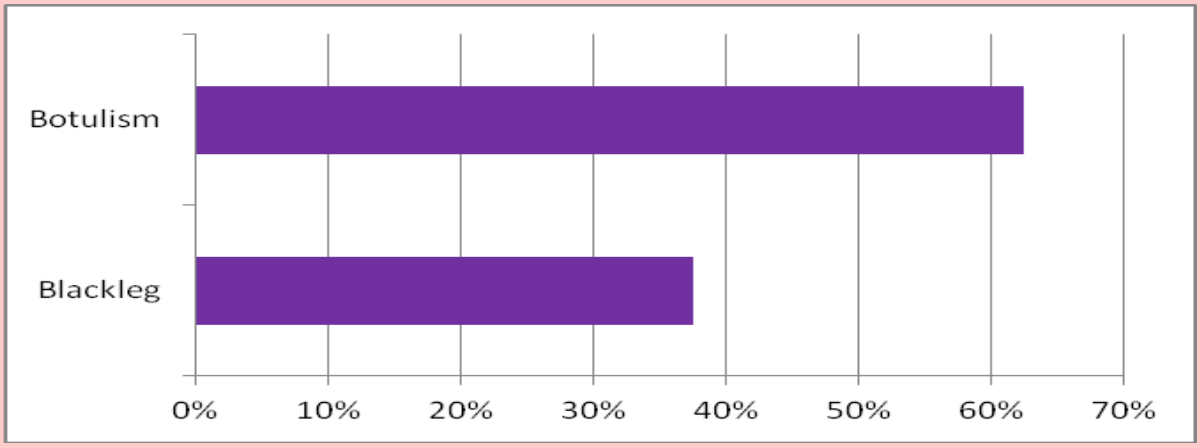

Figure 8: The relative frequency of bovine clostridial disease diagnoses, in cattle of all ages, recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=16).

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The causes of bovine mortality (age-specific)

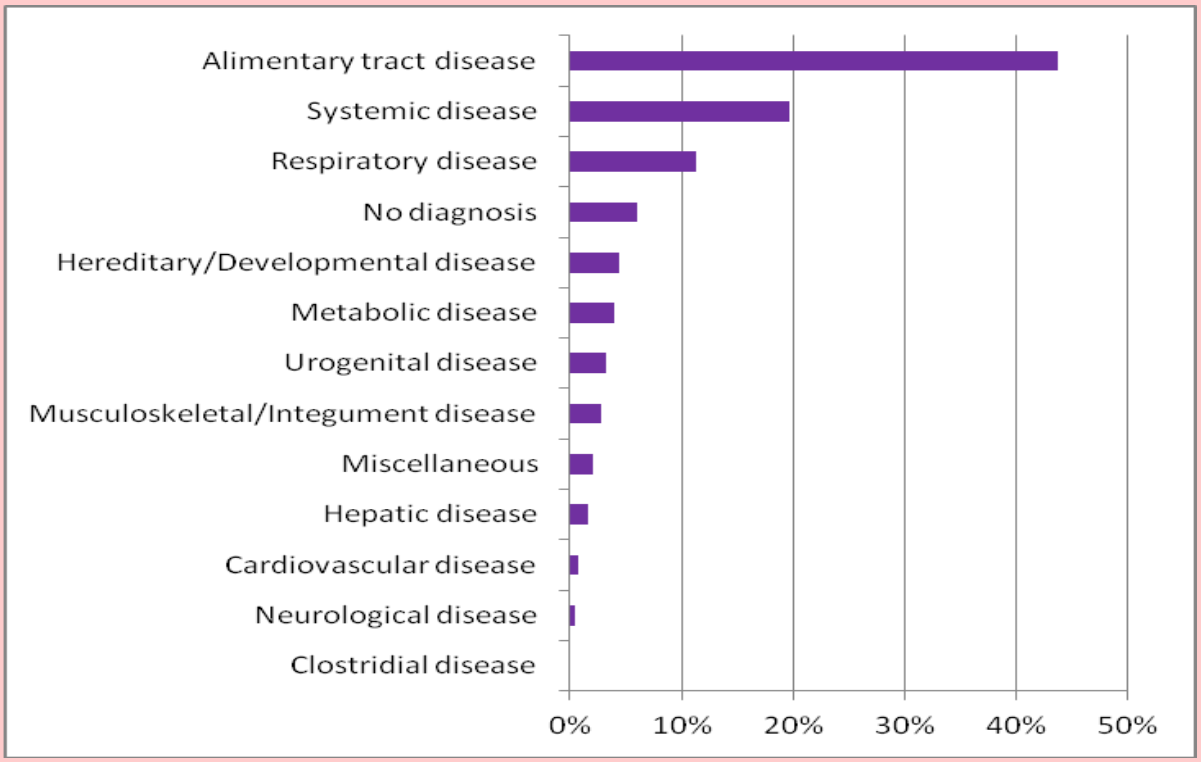

Figure 9: The causes of bovine mortality in neonatal calves (calves aged less than one month) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 1 2019 (n=249).

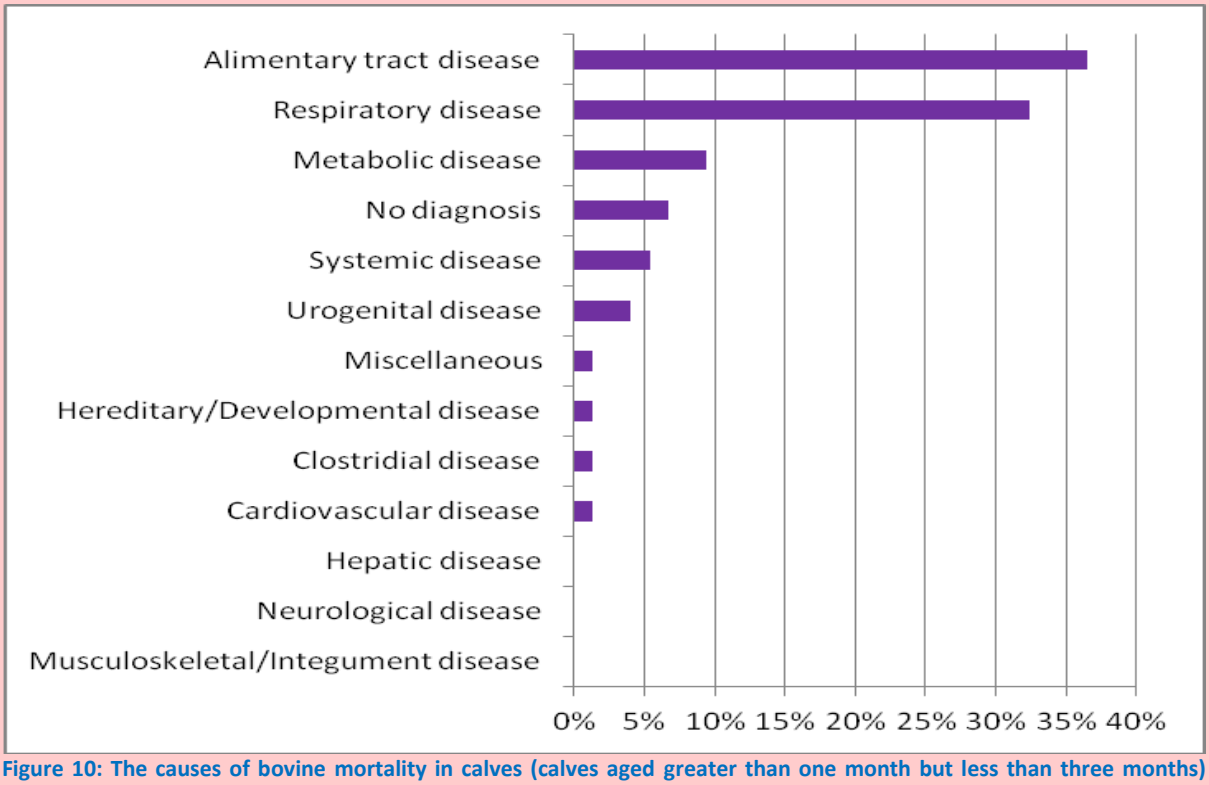

Figure 10: The causes of bovine mortality in calves (calves aged greater than one month but less than three months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 1 2019 (n=74).

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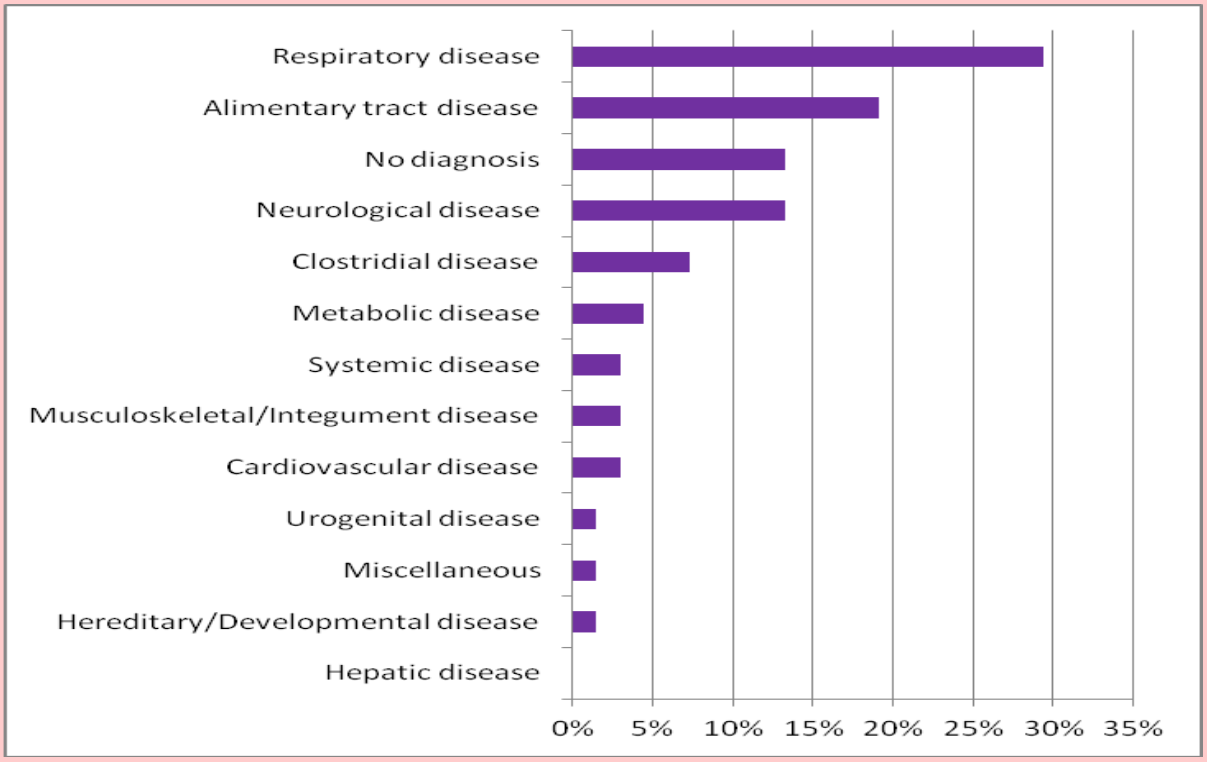

Figure 11: : The causes of bovine mortality in weanlings (bovine animals aged greater than three months but less than twelve months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 1 2019 (n=68).

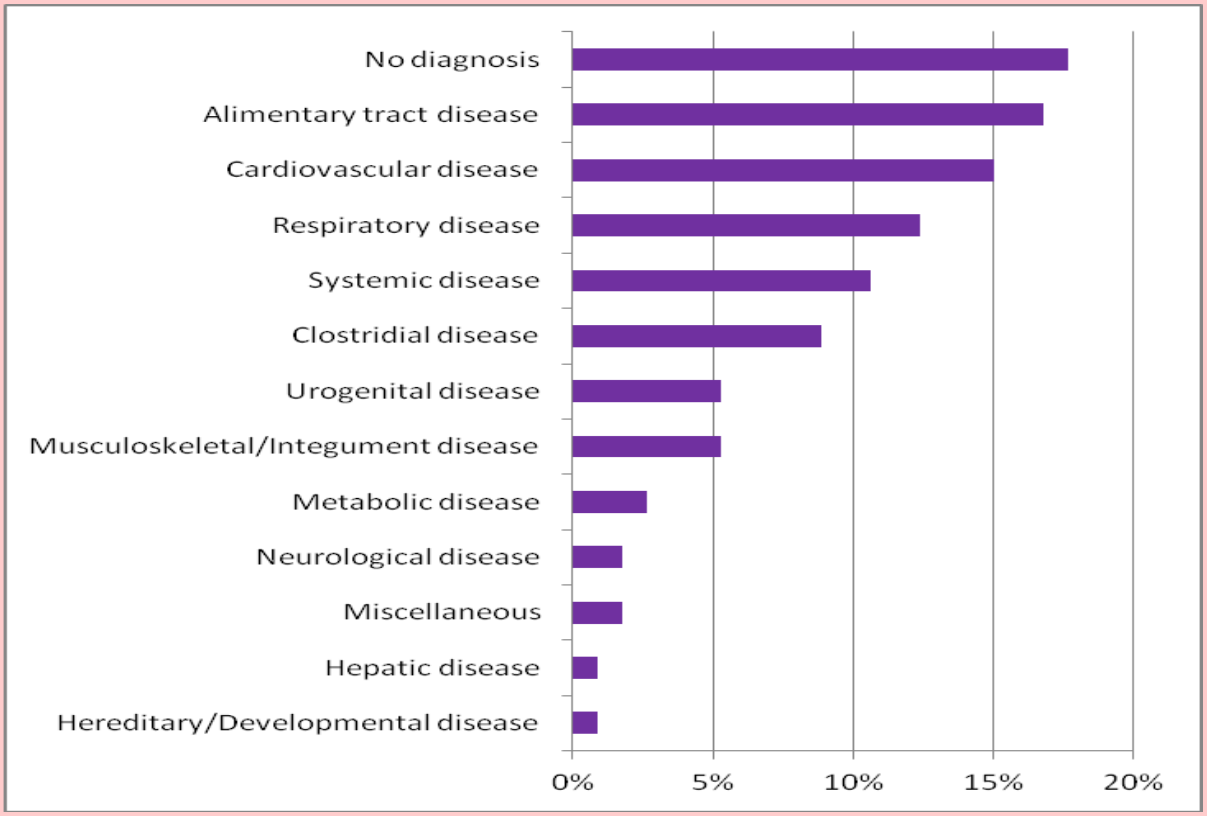

Figure 12: The causes of bovine mortality in adults (bovine animals aged greater than or equal to twelve months) recorded on post-mortem examination by the RVLs, categorised by system or cause, during Quarter 1 2019 (n=113).

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

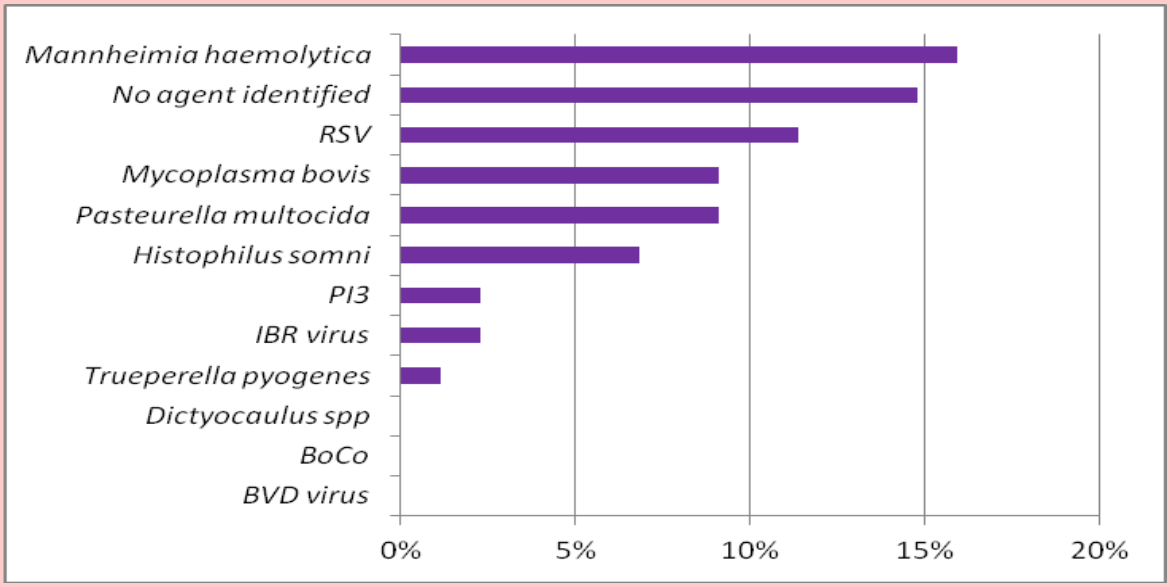

Figure 13: The relative frequency of specific respiratory pathogens identified in bovine carcases examined on post-mortem examination by the RVLs, in which a diagnosis of respiratory disease was made during Quarter 1 2019 (n=88).

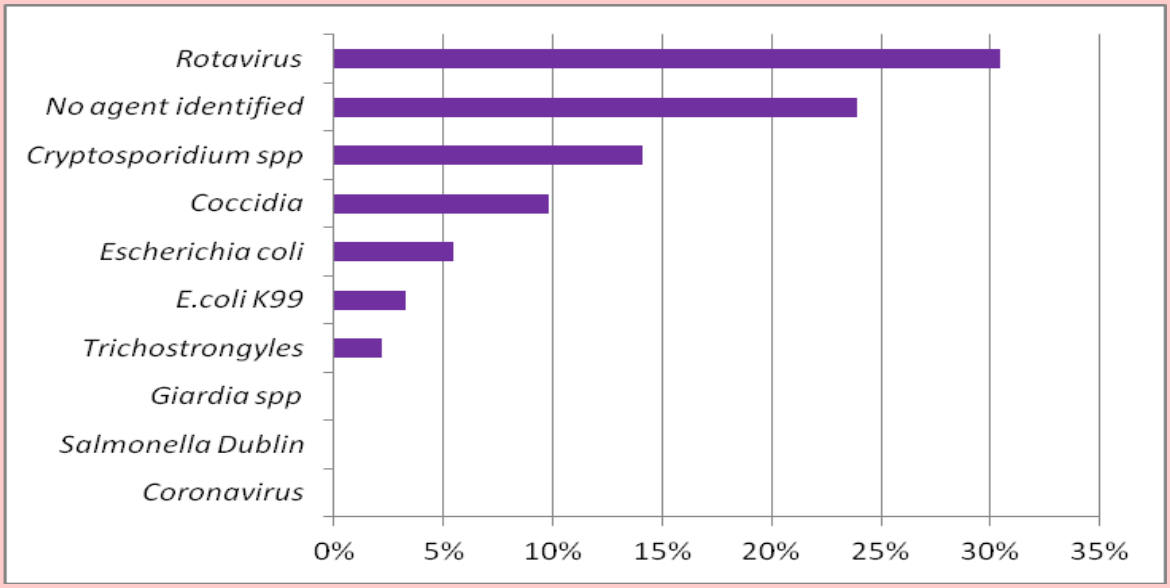

Figure 14: The relative frequency of specific alimentary tract disease pathogens identified in bovine carcases examined on post-mortem examination by the RVLs, in which a diagnosis of 'enteritis' or 'gastro-enteritis' was made during Quarter 1 2019 (n=92).

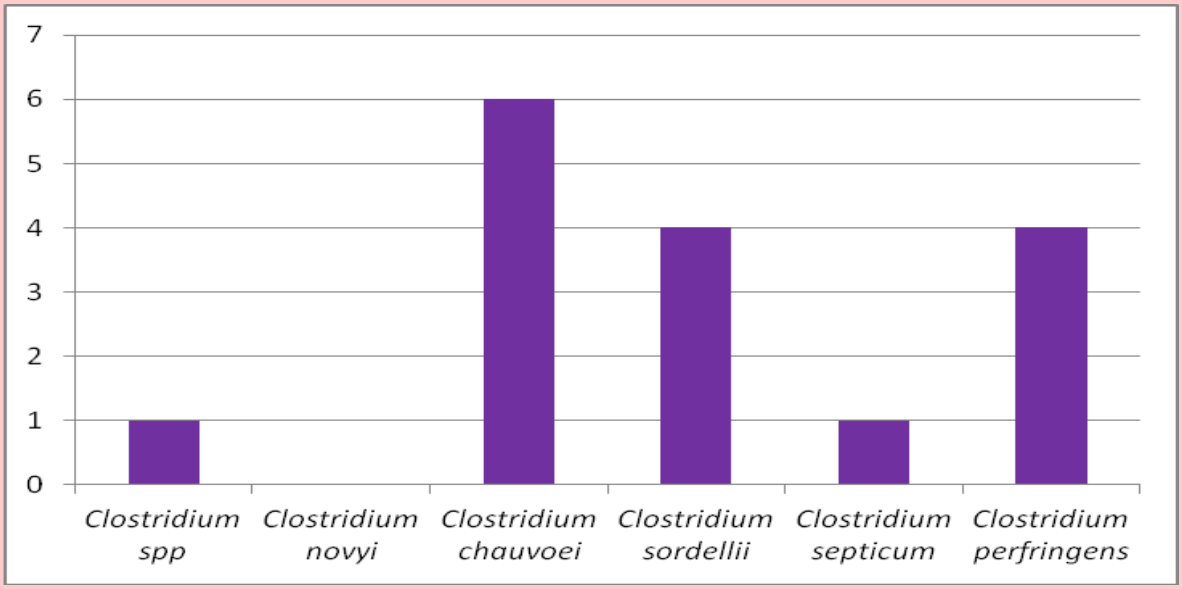

Figure 15: The frequency of identification of *Clostridium* species on post-mortem examination of bovine animal carcases of all ages by the RVLs during Quarter 1 2019.

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

Enteric pathogen	Negative	Positive	%Positive
E.coli K99	485	9	1.8%
Coronavirus	645	1	0.2%
Salmonella culture	627	16	2.5%
Cryptosporidium parvum	545	106	16.3%
Rotavirus	395	251	38.9%

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 1 2019 from both clinically ill animals by veterinary practitioners in the field and from bovine carcases during post-mortem examination by the RVLs.

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

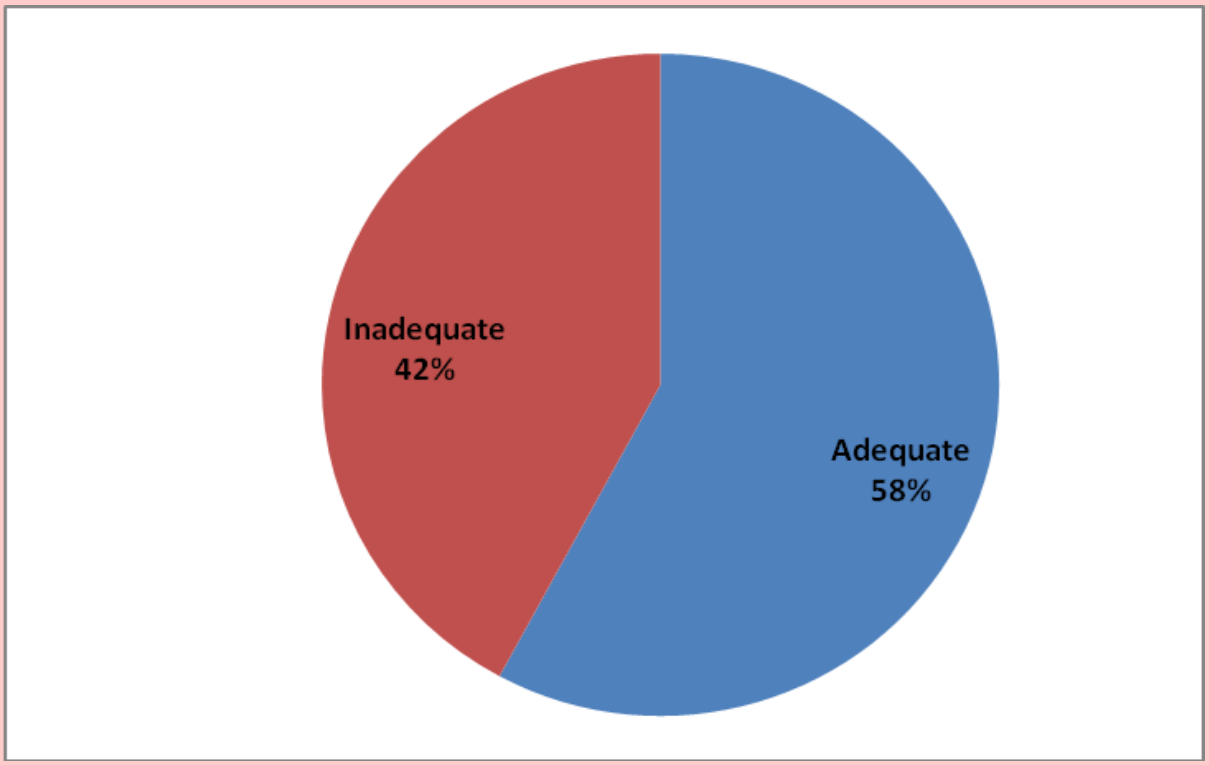

Figure 16: The results of the ZST tests performed on both clinically ill animals and on carcases submitted for post-mortem examination by the RVLs during Quarter 1 2019 (n=589). The ZST test is used to determine the immunoglobulin status of the calf which can reflect the extent to which maternal colostral 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

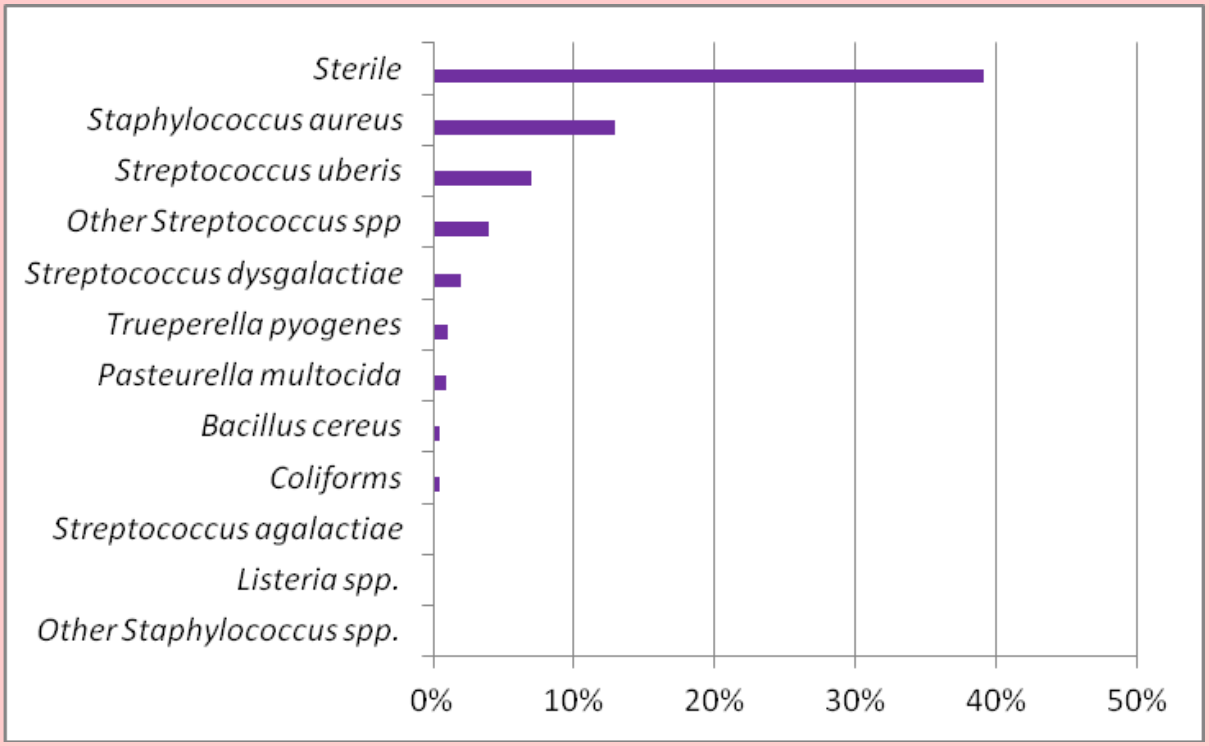

Figure 17: The relative frequency of isolation of specific mastitis pathogens in milk sample submissions (n=650) for bacteriological culture by the RVLs during Quarter 1 2019.

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Bovine abortion and perinatal death

Foetal diagnosis	Number	Percentage
Abortion	489	68.0%
Anoxia/Hypoxia	35	4.9%
Hereditary and developmental anomalies	25	3.5%
Mummification	2	0.3%
Stillbirth	0	0.0%
Perinatal mortality	18	2.5%
Placentitis	7	1.0%
Goitre	1	0.1%
Dystocia	23	3.2%
Bacteraemia/Septicaemia	7	1.0%
Weak calf syndrome	0	0.0%
Aspiration pneumonia	2	0.3%
Haemorrhage	2	0.3%
Miscellaneous causes	89	12.4%
No Diagnosis	19	2.6%
	719	

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=719) by the RVLs during Quarter 1 2019.

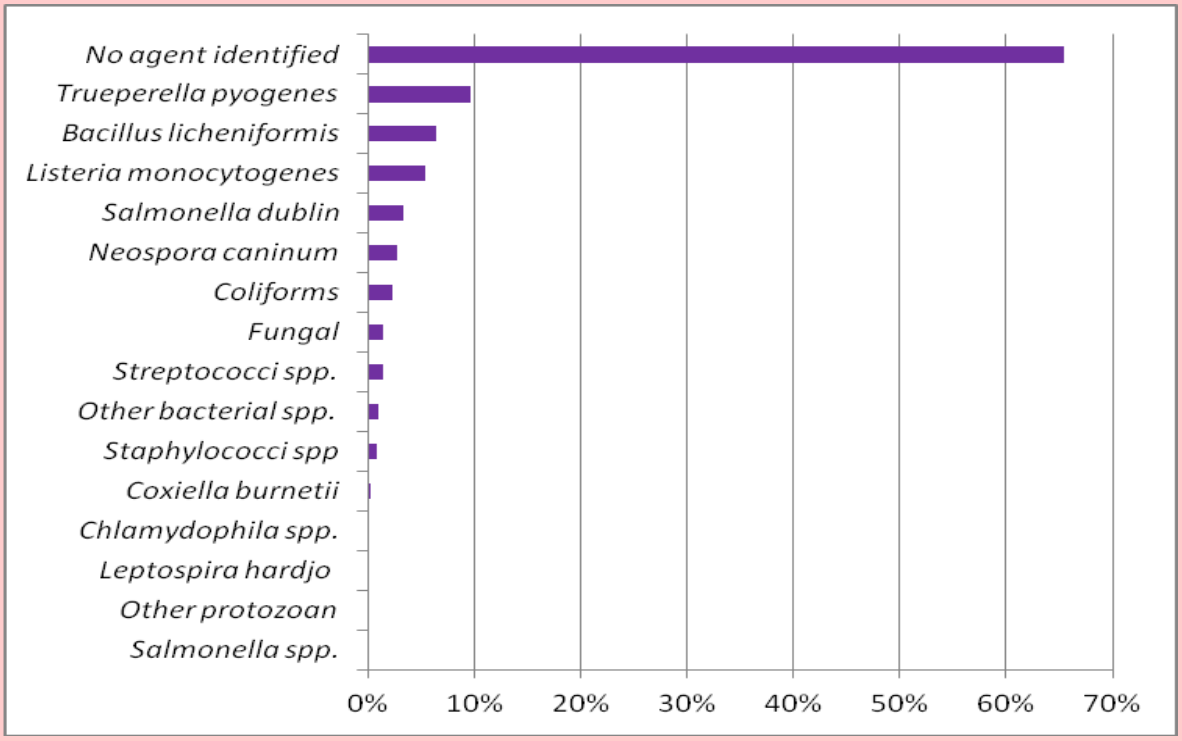

Figure 18: The relative frequency of detection of infectious agents in foetuses submitted to the RVLs for post-mortem examination during Quarter 1 2019 in which abortion, stillbirth or placentitis were diagnosed (n=487).

https://www.agriculture.gov.ie/animalhealthwelfare/laboratoryservices/regionalveterinarylaboratoryreports/

Ovine disease surveillance

Causes of ovine mortality

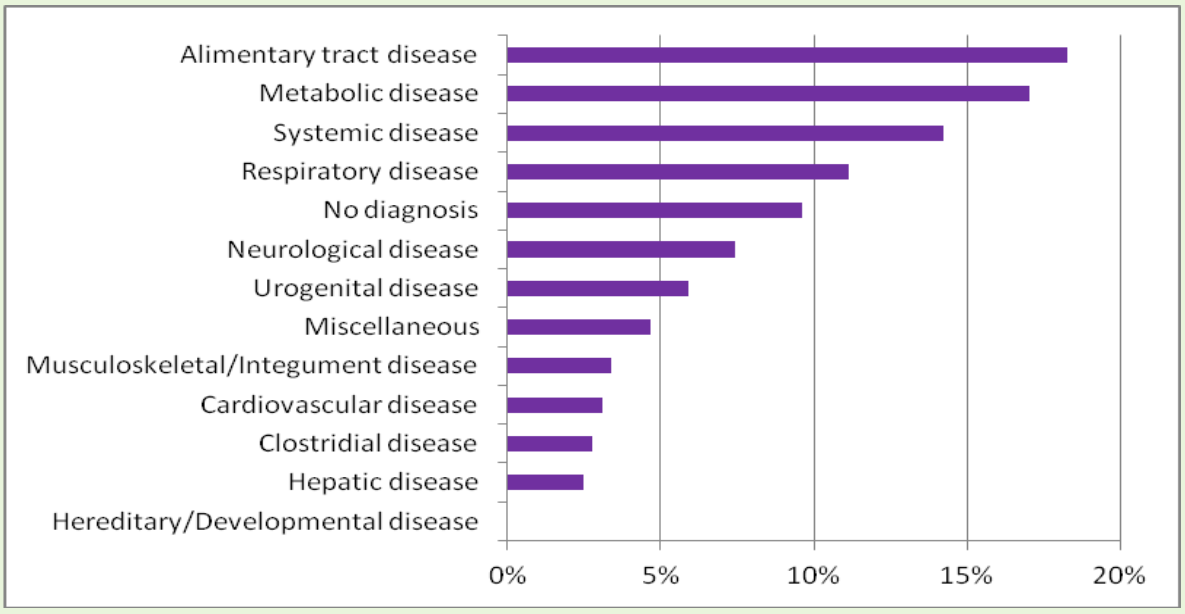

Figure 19: The causes of mortality in sheep carcases recorded on post-mortem examination by the RVLs during Quarter 1 2019, categorised by the system affected or by cause (n=323).

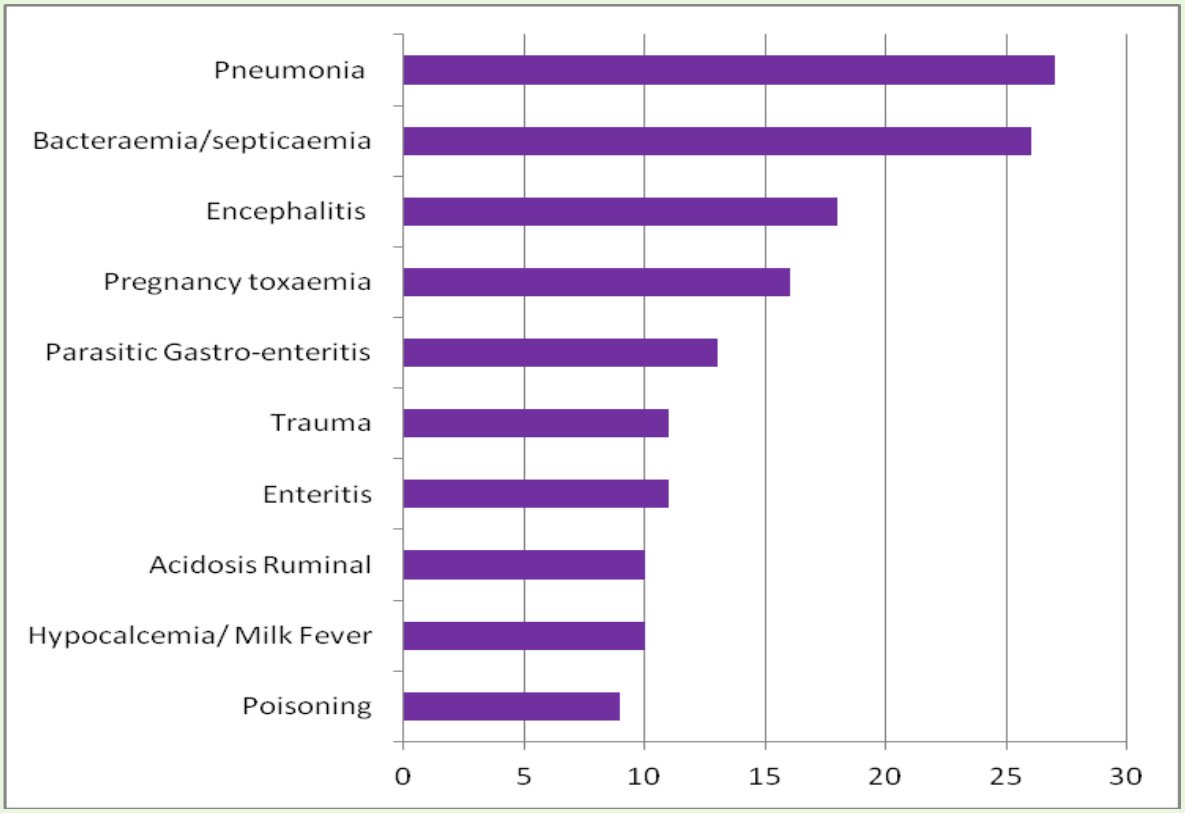

Figure 20: The ten most common individual diagnoses recorded in sheep carcases on post-mortem examination by the RVLs during Quarter 1 2019 (n=323).

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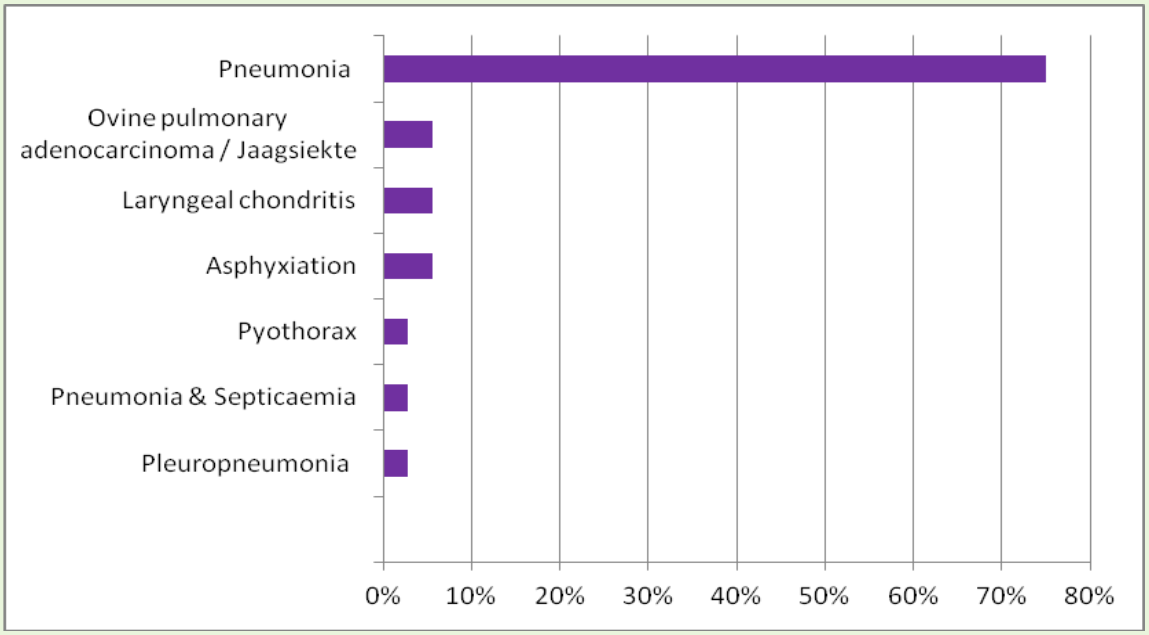

Figure 21: The relative frequency of respiratory disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=36).

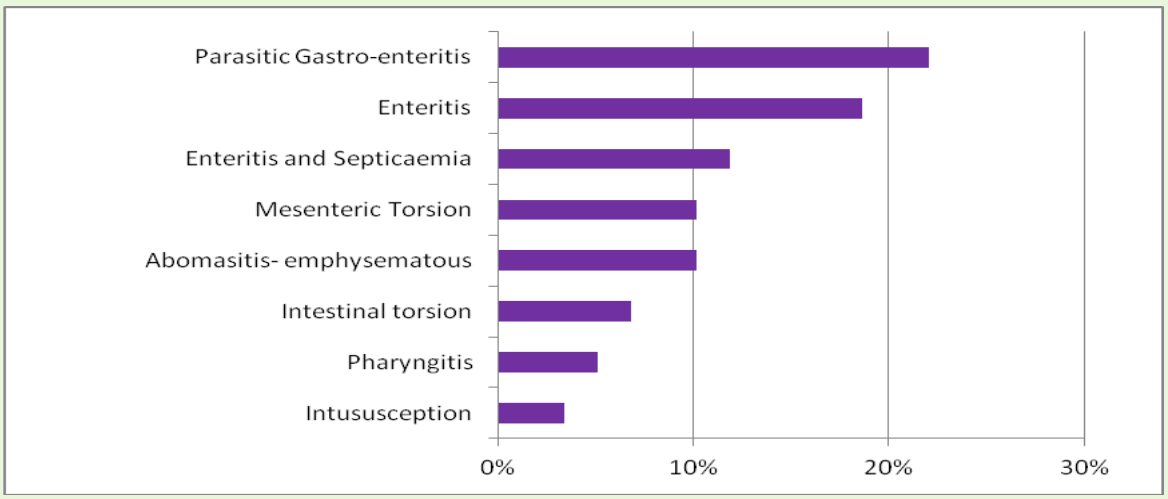

Figure 22: The relative frequency of alimentary tract disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=59).

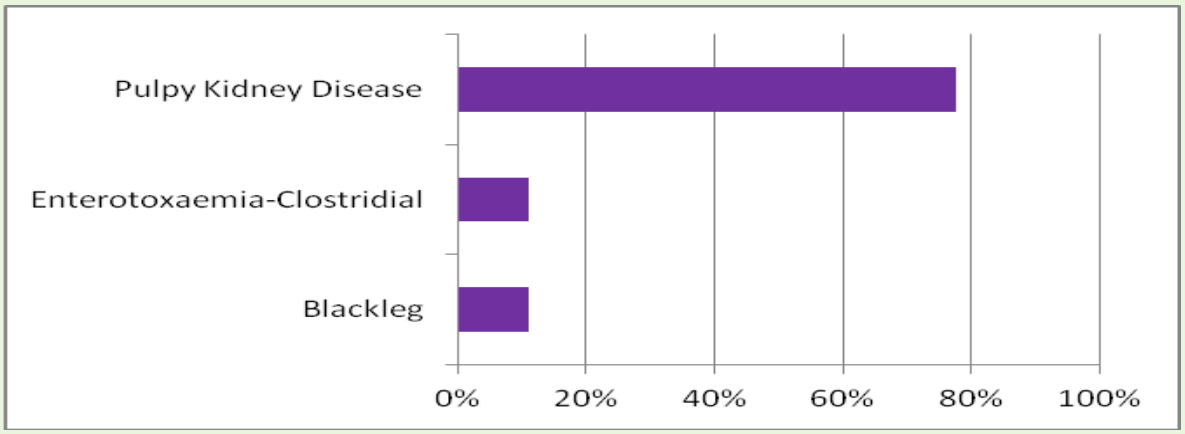

Figure 23: The relative frequency of clostridial disease diagnoses in sheep as recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=9).

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Ovine abortion

Diagnosed cause of foetal death	Number	Percentage
Abortion	293	83.2%
Miscellaneous causes	29	8.2%
Perinatal mortality	10	2.8%
Hereditary and developmental anomalies	5	1.4%
Bacteraemia/Septicaemia	3	0.9%
Placentitis	3	0.9%
Mummification	3	0.9%
Anoxia/Hypoxia	3	0.9%
No Diagnosis	2	0.6%
Dystocia	1	0.3%
Goitre	0	0.0%
	352	

Table 4: The relative frequency of the diagnosed causes of death in ovine foetuses recorded on post-mortem examination by the RVLs during Quarter 1 2019 (n=352).

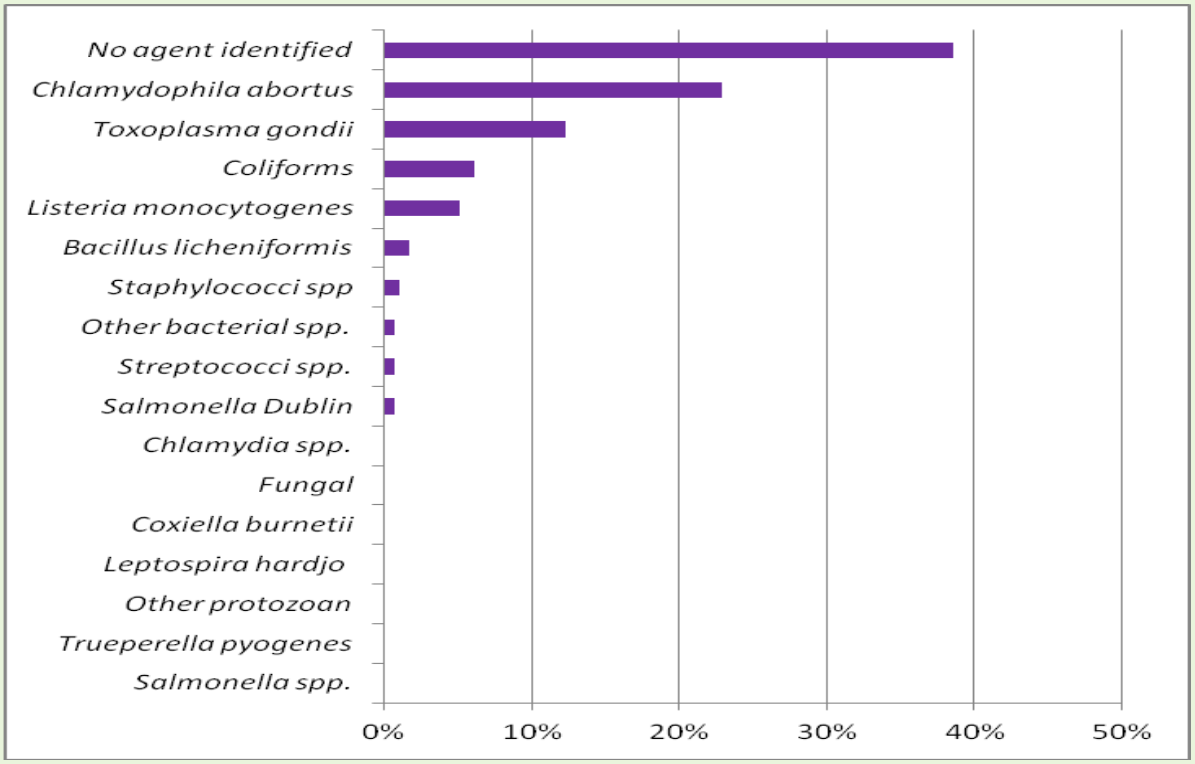

Figure 24: The relative frequency of abortion agents identified in ovine abortion diagnoses (n=293) recorded on post-mortem examination by the RVLs during Quarter 1 2019.