

# Causes of death in calves — how accurate is our diagnosis?

**John Mee and Jonathon Kenneally**

*Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork*

## Summary

- The causes of death in dairy calves (n=120) diagnosed by the farmer and by postmortem examination were compared over seven years (2013–2019).
- In young calves (<7D old) there was moderately good agreement (69%) between the clinical and postmortem diagnoses.
- In older calves (≥8D old) there was poor agreement (38%); under-diagnosis of stomach and multiple organ infections contributed to this.

## Introduction

According to the national report of the six regional veterinary laboratories, infections of the gut (scour), multiple organs (systemic infections) and the lungs (pneumonia) are the three most common causes of death in calves less than six months of age. Given that only a small proportion (~<10%) of dead calves are submitted for postmortem, farmers often rely on their own diagnosis to determine the cause of death. Hence, the objective of this study was to explore how well farmers' diagnoses aligned with postmortem diagnoses and how we could improve the former if they deviated greatly from the latter.

## Research study

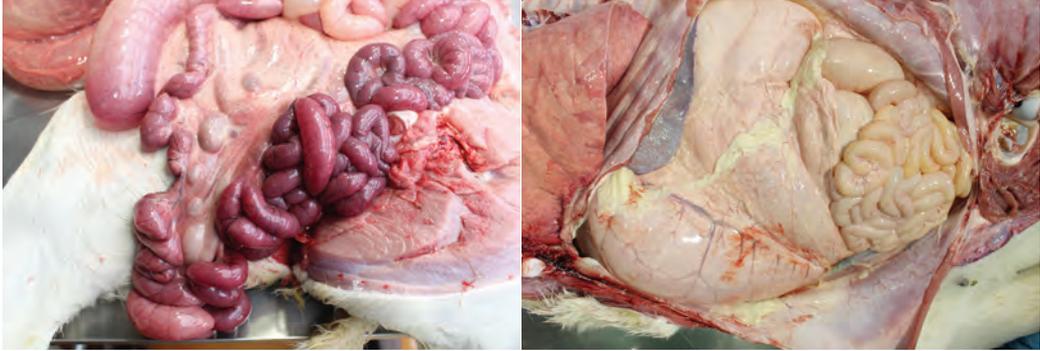
The data for this survey came from spring-born dairy calves (n=120) which died between 3 and 122 days of age (53% ≤7D and 47% >7D old) and were submitted by farmers (n=35) to the Moorepark Postmortem Laboratory over a seven year period (2013–2019). Each ear-tagged carcass was accompanied by the calf passport/identity card and a submission sheet containing the history of calf illness and treatment. A complete postmortem examination was conducted on each calf with collection and submission of samples for laboratory examination as required. The 'symptoms' reported by the farmer on the calf submission sheet were compared with the outcome of the postmortem and laboratory testing (gold standard) for young (3–7D old), older (8–122D old) and all calves. The five most common farmer and the five most common postmortem diagnoses were compared for level of agreement.

## Results

In total, there were 21 farmer and 18 postmortem diagnosis categories. For calves ≤7D old, the five most common postmortem diagnoses were intestinal atresia (blocked bowel), systemic infection (multiple organ infection), aspiration pneumonia (colostrum tubed into lungs), enteritis (scour) and other congenital defects (deformed calves). There was very good agreement between farmer and postmortem diagnoses for atresia (82%) and other defects (75%), but poor agreement for aspiration pneumonia (50%), enteritis (40%) and systemic infection (0%). For calves ≥8D old, the five most common postmortem diagnoses were systemic infection, enteritis, abomasal ulceration (stomach ulcers), navel infection and bloat. There was very good agreement between farmer and postmortem diagnoses for bloat (100%) and enteritis (78%), but poor agreement for septicaemia and navel infection (25%), and abomasal ulceration (0%).

Excluding congenital defects, the two most common causes of calf mortality across all ages diagnosed by farmers and by postmortem were scour (15%) and systemic infection

(21%), respectively. In cases of systemic infection (Figure 1), farmers most commonly reported these as scour and tended to underdiagnose the additional infections. Similarly, in cases where farmers diagnosed scour alone they tended to underdiagnose additional sepsis.



**Figure 1.** Systemic infection was the most common cause of calf mortality (enteritis — infection of the bowel on the left; and peritonitis - infection of the abdomen, on the right)

### Conclusions

While farmers are good at diagnosing some causes of calf mortality such as deformed calves and bloat, they are less accurate in differentiating between uncomplicated scour and scour accompanied by other organ infections (systemic infection). Systemic infection should be suspected whenever a calf is diagnosed with a simple infection, e.g. scour or navel ill.

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