

# Do we really know how treaters make decisions on which calf to treat?

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## Introduction

Lack of compliance with protocols on dairy farms is cited as an important reason for drug residues, poor estrus synchronization, and mastitis. In calf-rearing, treatment records are often absent making it difficult for veterinarians to understand treatment protocol compliance, and on what signs treaters rely to make treatment decisions. The objective of this study was to compare clinical observations made by trained investigators with treatment decisions for pre-weaned calves made by farm personnel.

## Materials & Methods

Data on clinical observations and treatments for over 400 calves from 4 on-farm clinical trials were merged. Daily clinical observations were made by veterinary or technician investigators for at least the first 28 days of life.

Clinical observations included:

- Fecal scores (FS): 0=formed to 4=watery with blood; FS≥2 was classified as "diarrhea",
- Attitude: alert or depressed,
- Hydration: based on sunken eyes and skin tent
- Respiratory score (RS): 0=normal to 4=abdominal labored breathing, and
- Presence of swollen joints, ear droop or navel swelling.

Calf treaters on each farm made independent decisions on which calf to treat and with what treatment. Clinical observations and treatments were recorded by investigators into a spreadsheet. Associations between different clinical scores and treatment decisions were evaluated.



Figure 1: Making a treatment decision.

Health status	Clinical signs	Score
Fecal consistency	Formed	0
	Semi-formed/soft	1
	Runny	2
	Watery	3
Respiratory signs	Runny/watery with blood	4
	Normal	0
	Rhinitis	1
Hydration status	Coughing	2
	Heavy thoracic breathing	3
	Abdominal breathing	4
	Normal appearance	0
Attitude	Sunken eyes	1
	Skin tented 5-10 seconds	2
	Skin tented >10 seconds	3
Ears	Alert	0
	Depressed	1
Navel	Non-responsive	2
	Normal	0
Joints	Head tilt, hanging head	1
	Normal	0
	Swelling/heat/pain	1
	Normal	0
	Swelling/heat/pain/lameness	1

Figure 2: Clinical Signs Scoring System

## Results

- 461 calves observed for 28 days – 14,019 calf-days of observation
- Mortality rate by 28 days across farms 9.8%  
--Range 1.5-28%
- Few calves had FS>1 in first week of life  
--5% of calves FS>1 by Day 8  
--FS>1 peaked at 13 days of age (47% of calves)
- Increasing FS was associated with a greater proportion of calf days where attitudes were "depressed", using Chi square
- No association between FS and hydration observations
- Over 86% (397) of the calves received at least one treatment
- First treatments were initiated from the first day of life to Day 28  
--Average age to first treatment 9 days
- Of those first treatments:  
--27% (109) of the calves had no clinical observations made by investigators  
--16% were treated when investigators noted a FS=1 and no other clinical observations
- No difference by farm in the proportion of calves with no clinical signs that were treated
- Of 117 calves with an initial treatment with FS=0, RS=0, navel=0 and ear =0:  
--20% received fluids/electrolytes or other supportive therapy  
--80% were treated with an antibiotic (spectinomycin sulfate, trimethoprim-sulfa, florfenicol, ceftiofur, and penicillin)
- There were 507 calf observation days with FS>1 with no treatments given

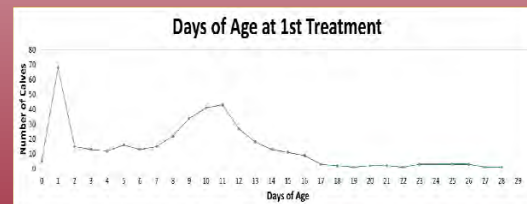


Figure 3: Days of Age at 1<sup>st</sup> Treatment (n=397) -- Distribution of the age of calves when they received their first treatment.

## Significance

- For these four calf-raising facilities, there appears to be no direct correlation between clinical observations made by the investigators and the initiation of treatment by farm personnel.
- The farm personnel were making decisions on treatment for which there may not have been enough clinical evidence, particularly for the use of antimicrobials.
- These data highlight the need for a better understanding of treatment decision-making and the opportunities for veterinarians to help establish and provide feedback on treatment goals and protocols for the judicious use of antimicrobials.



Figure 4: Dairy's Drug Area With multiple antimicrobials.

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