

Calf health treatment protocols, compliance and economic impact: Northern New York Research Results

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Throughout 2018 we conducted a research project to determine protocols compliance for calfhood illnesses on NNY dairy farms, determine the treatment cost associated with calfhood illness and bring awareness to antibiotic stewardship to increase consumer confidence in our food supply.

Farms were selected based on 3 criteria: having written youngstock treatment protocols for respiratory and scours, having written or electronic youngstock treatment records that include: animal ID, reason for treatment, date of treatment, drug used, and dosage, additionally, farms had to allow access to protocols and treatment records. Treatment protocols were collected from all participating farms to compare to actual treatment records and determine if an animal was treated per protocol. Animals were classified as not on protocol for the following reasons: if the drug listed on the treatment record did not match the drug listed on the written farm protocol, if the treatment was not provided for the full duration as written on the protocol, and if the correct dosage of the drug was not provided.

Treatment records (paper and/or electronic) were collected from all farms. Records were reviewed for protocol compliance, to evaluate the total number and percentage of youngstock treated per farm, the number and percentage of pre-weaned heifers treated per farm, the number of times an individual animal was treated over the 8-month period of the study (January 1st, 2018 to October 31st, 2018). During the review of records, events were standardized to “respiratory, scours, navel, metaphylaxis and other”. Other included: bloat, joint-ill, pink eye, ear infection and arthritis. If multiple treatments were provided to the animal for the same bout of illness it was considered 1 event (ie. A five-day treatment for a navel infection = 1 event).

Financial analysis: To standardize the treatment price across participating farms, costs were determined for each treatment based off the purchase price from Valley Veterinary Supply. A cost of individual treatment, and total treatment cost/calf was then calculated. It is important to note that only drug cost was included in the calculation of cost.

A total of 6,255 treatment records, from 2,618 non-lactating heifers were collected from eight Northern New York dairy farms between January 1st, 2018 to August 31st, 2018. Average herdsize was 1,836 mature cows with a range of 709 to 3,240. Average size of the heifer herd was 2056 with a range from 810 to 3,006. In total, this study represents approximately 14,391 non-lactating animals. Average herdsize reported in this study is greater than many NNY herds. This is because all small farms that were contacted to participate in the study did not reach at least one of the three criteria

A total of 5,732 (91.59%) of treatments were given to non-lactating heifers, according to the written on-farm protocol. Compliance across herds ranged from 73.58 to 100%. Protocol compliance was similar across treatment events, and ranged from 90.03% compliance for pneumonia to 100% compliance for treatments categorized in other. Compliance to treatment protocols was very high in this study. It's important to note that the farm that had 100% compliance was recording all events and treatments in Dairy Comp 305, and there were no written records. This observation study only compared records to protocols, we did not evaluate how accurate the records were on the farm; i.e. did the treatment record match what was actually provided to the calf? It is also important to note that three farms did not report any treatment events for calves less than 31 days of age.

Average age of treatment was 77 days of age (range = 0 to 626; Table 1). The largest number of

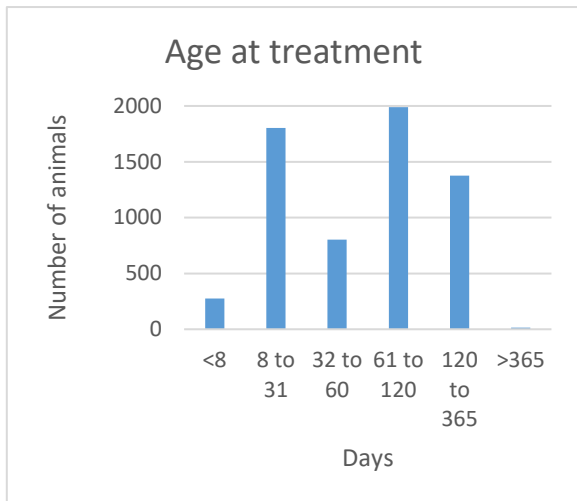
calves were treated between 8 to 31 days, primarily scours, and 61 to 120, primarily scours (figure 1). Only 14 heifers were treated after 365 days of age, 9 for pneumonia and 5 for “other”. Treatment of navel infections occurred early in life, with an average of 12.19 days of age, but ranging from 3 to 73 days (Table 5).

Scour treatments occurred within the first few months of life, with an average age of 13.05 days of age, but ranged from 0 to 104 days.

Table 1. Average age (days) at onset of event by illness type

Illness	n	mean	SD	Low	High
Pneumonia	4304	82.76	65.12	0	626
Scours	471	13.05	10.52	0	104
Metaphylaxis	823	73.24	20.34	0	112
Navel	365	12.19	12.19	3	73
Other ¹	278	209	73.95	93	444
Overall	6241	77.74	67.76	0	626

¹ Other includes: bloat, joint-ill, pink eye, ear infection and arthritis.



Average treatment cost, per event, was \$8.08 per animal, with a range of \$0.09 to \$34.28. Average total cost of treatment(s) per animal over the 8-month period was \$18.17 with a range of \$0.20 to \$129.10. Average event treatment cost ranged from \$1.12 for scours (range \$0.35 to 29.12) and navel infections (range = \$0.20 to \$29.12), to \$9.08 for pneumonia (range = \$ 0.09 to \$34.28) and \$9.57 for metaphylaxis (\$0.489 to \$9.79). It is important to note, that for treatment cost we only evaluated the cost of the drug that was administered. We did not include costs associated with labor, supplies (needle, syringe, IV tube...), lost future milk production, increased cost of heifer rearing related to losses in feed efficiency, growth rates, as well as costs related to developing carrier animals and risk of relapse.

Calves were treated an average of 2.19 times over the 8-month period with a range of 1 to 9 times.

Conclusions

The two greatest challenges with this project were identifying, and subsequently enrolling farms, that had written calf treatment protocols, and accurate calf treatment records that included: ID, date of treatment, reason treated, drug administered and dosage. Many farms did not have written calf treatment protocols, for those that did, many either did not keep calf treatment records, or kept very minimal records that didn't include necessary information. This is concerning from both an animal welfare and food safety standpoint. However, this study does demonstrate that with both written treatment protocols and written treatment records, protocol compliance is high.