

Motivations of Calf Care Workers for Sick Calf Identification and Treatment Decisions

C. Crudo, D. A. Moore*, J. A. Afema, and W. M. Sisco
 College of Veterinary Medicine Washington State University



INTRODUCTION

Cases of calf diarrhea tend to be over treated with antimicrobials (Berge 2009).

- Identification and treatment of sick pre-weaned calves is in the hands of employees on large Western US farms.
- Understanding motivation behind why and how calf care workers make treatment decisions could help Extension educators and dairy advisors create more tailored messages about judicious antimicrobial use.
- Purpose was to better understand decision making by assessing employee motivation using a standardized survey tool.

METHODS

- Western United States dairy farms and calf ranches with > 300 pre-weaned calves (>500 milking cows) were contacted through their veterinarian to participate.
- Utilizing employee motivation work by Leonard et al. (1999), we developed a survey tool to learn about motivations behind calf treatment decision-making (**Page 4**).
- Survey administered as one-on-one interviews on the farm in English or Spanish.
- We used 5 motivation type–responses for each of 10 questions (Leonard 1999):
 - Intrinsic: motivated by personal satisfaction with the tasks
 - Extrinsic: motivated by financial rewards
 - Internal: motivated by a belief system and values
 - Goal Internal: motivated to follow the goals of the farm
 - External: motivated by recognition from supervisor or coworkers
- Some questions on information gathering and calf health goals.
- Summary statistics for common responses (Excel and Proc Freq SAS)
- Latent class analysis of motivation type-responses to 10 questions (Proc LCA-SAS)
- Resulting Latent classes evaluated by demographic variables



RESULTS

- Convenience sample of 28 farms enrolled, 1 to 9 people per farm for total of 107 surveys. Most were calf feeders.

Job Title	
Calf Feeder	50
Calf Manager	27
Calf Treater	18
Herd Manager	2
Herdsman	4
Other	6
Total	107

Age	
18-25	14
25-35	44
35-45	33
45-55	16
	107

Time in Position	
< 1 year	12
1-5 years	35
5-10 years	27
>10 years	33
	107

- Most common motivation type overall was INTERNAL. Two answered EXTRINSIC to one question each despite 42% saying that their workplace has a reward system for meeting workplace goals.
- **Sick Calf Identification Questions** – Predominant responses were INTERNAL

QUESTION	DOMINANT TYPE
“I try to identify a sick calf because...”	INTERNAL (50%)
“If a calf doesn’t finish their milk, I determine if she is sick based on...”	INTERNAL (32%)
“In determining if a calf is healthy I think about...”	INTRINSIC (47%)
“If a calf looks depressed, I determine if it is healthy by...”	INTERNAL (68%)

- **Calf Treatment Questions** – Predominant responses were GOAL INTERNAL

QUESTION	DOMINANT TYPE
“The main factor in deciding between antibiotics and fluids for treating a diarrhea calf is..”	GOAL INTERNAL (46%)
“After deciding to use antibiotics on a scours calf, I chose the antibiotic based on...”	GOAL INTERNAL (40%)
“I stop treating with an antibiotic because...”	GOAL INTERNAL (51%)
“When I decide to stop treating I think about...”	INTERNAL (57%)
“I choose the antibiotic treatment for a sick calf by...”	GOAL INTERNAL (37%)
“If a calf has diarrhea, I base my treatment decision on...”	INTRINSIC (39%)

Motivations of Calf Care Workers for Sick Calf Identification and Treatment Decisions

C. Crudo, D. A. Moore*, J. A. Afema, and W. M. Sischo

College of Veterinary Medicine Washington State University



RESULTS

- Different dominant motivation type by job title:

Calf Feeders – most common response was GOAL INTERNAL 30.6%, followed by INTRINSIC 27.6%

Calf Treaters – most common response was INTRINSIC 39.4%, followed by INTERNAL 27.2%

Calf Managers – most common response was INTRINSIC 35%, followed by GOAL INTERNAL 33.3%

Herdsmen – most common response was GOAL INTERNAL 40%, followed by INTRINSIC 30%

Herd Manager – most common response was INTRINSIC 60%

- Intrinsic: motivated by satisfaction with the tasks
- Extrinsic: motivated by financial rewards
- Internal: motivated by belief system/values
- Goal Internal: motivated to follow the goals of the farm
- External: motivated by recognition from supervisor or coworkers

- Answers to 10 motivation questions fell into 4 latent classes:

LC1: (17%) identify sick calves & make treatment decisions based on recognition by others

LC2: (41%): identify sick calves & make treatment decisions based on beliefs & satisfaction with tasks

LC3: (17%) identify sick calves & make treatment decisions based on farm goals/protocols

LC4: (25%) identify sick calves based on belief systems but make treatment decisions mostly based on farm goals

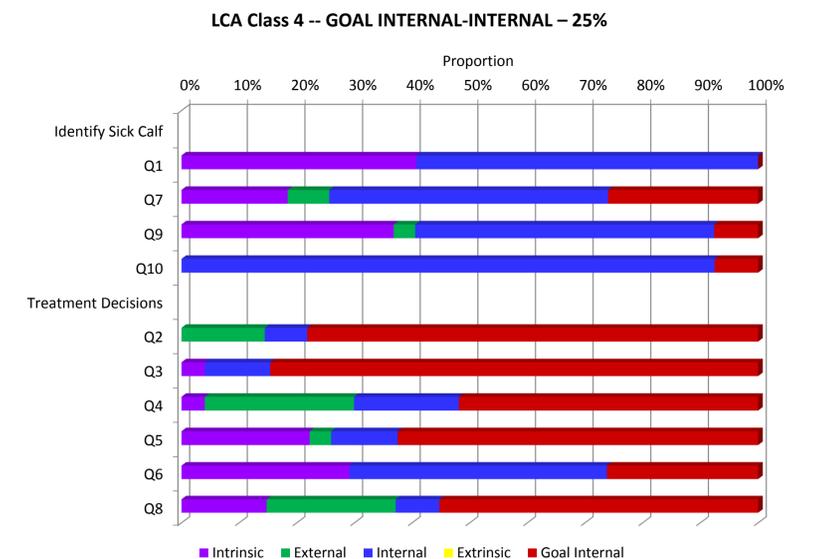
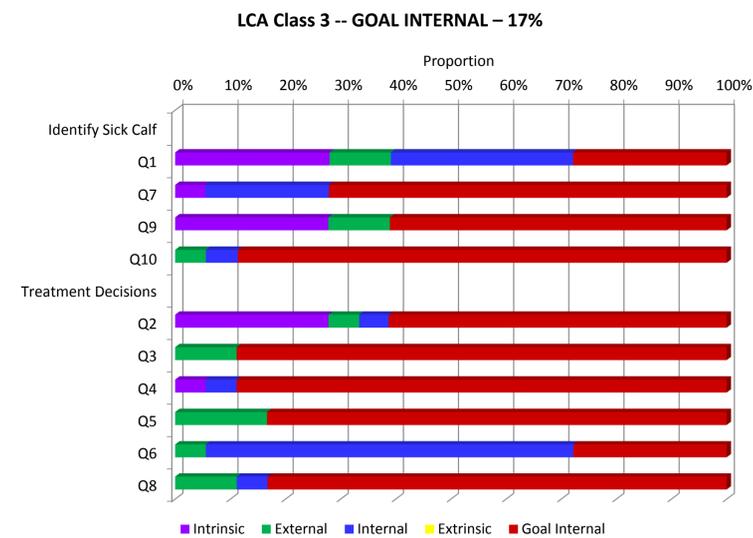
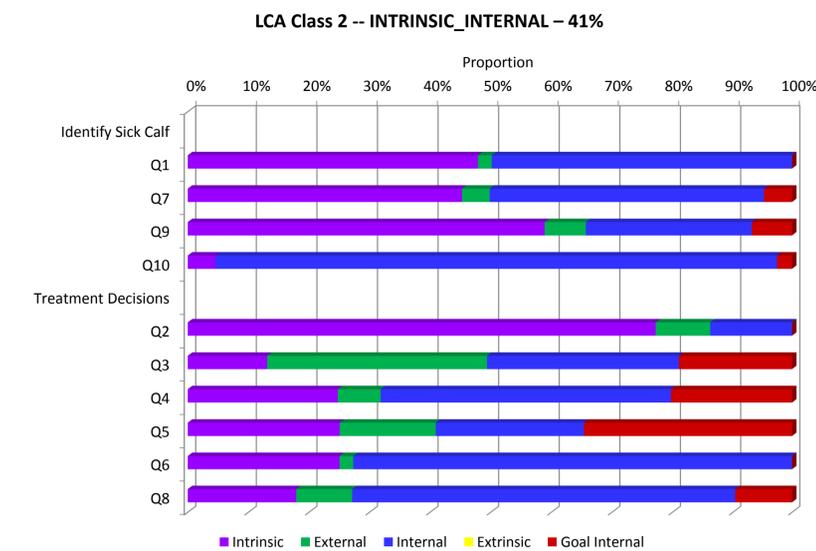
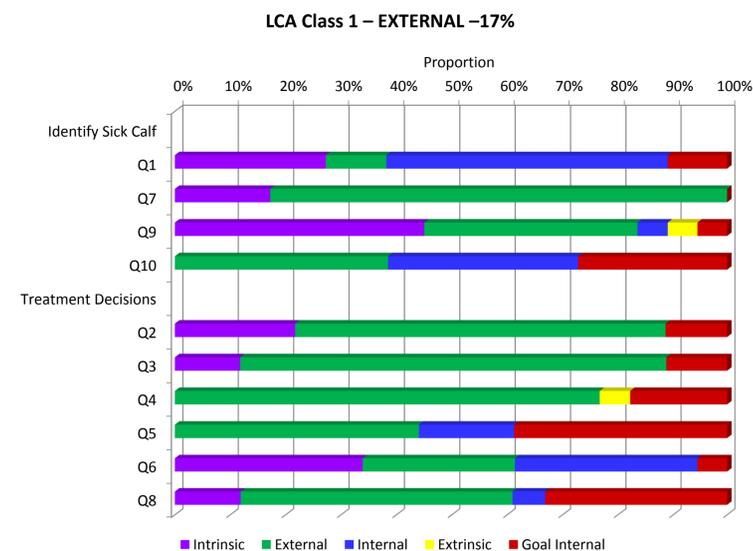


Deciding to treat: Sick calf identification



Deciding how to treat

RESULTS



Motivations of Calf Care Workers for Sick Calf Identification and Treatment Decisions

C. Crudo, D. A. Moore*, J. A. Afema, and W. M. Sischo

College of Veterinary Medicine Washington State University



RESULTS

- Latent class was correlated with Job, Age, and Calf Mortality goal of less than 2%

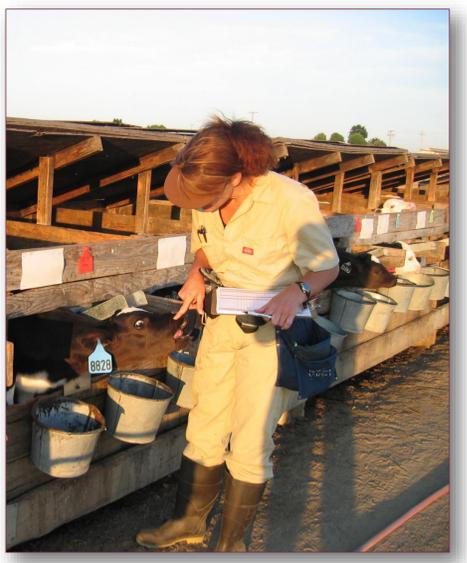
Job	Latent Class number			
	1	2	3	4
Calf Feeder	0.22	0.32	0.20	0.26
Calf Manager	0.07	0.44	0.15	0.33
Calf Treater	0.11	0.56	0.17	0.17
Herd Manager	0.00	1.00	0.00	0.00
Herdsmen	0.00	0.25	0.25	0.50
Other	0.50	0.50	0.00	0.00

Age	1	2	3	4
18-25	0.29	0.43	0.07	0.21
25-35	0.16	0.43	0.18	0.23
35-45	0.09	0.42	0.21	0.27
45-55	0.25	0.31	0.13	0.31

Mortality Goal	1	2	3	4
GT 0.02	0.23	0.34	0.17	0.26
LE 0.02	0.12	0.39	0.18	0.31
Missing/No	0.19	0.57	0.14	0.10

LATENT CLASSES:

- LC1: (17%) identify sick calves & make treatment decisions based on financial gains; job: others & calf feeders
- LC2: (41%): identify sick calves & make treatment decisions on beliefs & satisfaction with tasks; job: all herd managers, most calf treaters, some calf managers & feeders.
- LC3: (17%) identify sick calves & make treatment decisions based on farm goals/protocols
- LC4: (25%) identify sick calves based on belief systems but make treatment decisions mostly based on farm goals



RESULTS

Who trained the person for their current position?

Herdsmen Involved	32	33%
Calf Treater Feeder Involved	25	26%
Calf Manager Involved	28	29%
Vet Involved	13	13%
Total	98	
Veterinarian Only	6	8%
Calf Manager Only	21	29%
Calf Treater/Feeder only	19	26%
Herdsmen Only	26	36%
Total	72	

If veterinarian involved in training, 54% and 77% of workers would use the veterinarian as an information source for **skill improvement** and **problem solving**, respectively.

If veterinarian not involved in training 20% and 15% would use the veterinarian as an information source for **skill improvement** and **problem solving**, respectively.

Most Important information source on the farm for skill improvement and problem solving was the calf manager followed by the herd manager.

CONCLUSIONS

- Providing information to calf care workers is not as simple as "Telling" them what to do.
- Financial reward systems, although in place on some farms are not motivating the people in their jobs.
- There is variability in individual motivations for decision-making as well as variation in motivation depending on the decision to be made.
- If most are Intrinsic-Internal with respect to deciding when to treat, could be reason for "over treatment".
- Need to provide information on why they might need to do a job a specific way (more background)
- Educational programs for calf care workers also need to incorporate an individual's belief system and values into the messages – specifically that they will be doing the right thing.

Motivations of Calf Care Workers for Sick Calf Identification and Treatment Decisions

C. Crudo, D. A. Moore*, J. A. Afema, and W. M. Sischo

College of Veterinary Medicine Washington State University



Appendix A: Motivation Questions

1. I try to identify a sick calf because:
 - a. I want to be recognized by my supervisor
 - b. I want a financial reward
 - c. I enjoy being able to successfully identify a sick calf
 - d. If I feel it is the right thing to do
 - e. The farm wants me to
2. If a calf has diarrhea, I base my treatment decision on...
 - a. My goals and beliefs
 - b. The farm's goals (protocols)
 - c. What my supervisor and coworkers would do/think
 - d. The treatment that will make me feel successful
 - e. How it might affect my pay
3. The main factor in deciding between antibiotics or fluids for treating a diarrhea calf is...
 - a. The farm's protocols
 - b. My intuition
 - c. What I feel will make me successful in my job
 - d. What my supervisor would think is the correct decision
 - e. Whether I'll get financially rewarded or punished for a particular choice
4. After deciding to use antibiotics on a scours calf, I chose the antibiotic based on...
 - a. What I feel works best
 - b. Which one makes me feel that I've done my job effectively
 - c. What the farm wants me to use
 - d. Which one might provide me with a financial reward
 - e. What my supervisor would want me to use

5. I stop treating with an antibiotic because...
 - a. I have completed the treatment protocol
 - b. My supervisor would think it was time to stop treating
 - c. I have accomplished my treatment goals
 - d. I feel the calf won't improve with further treatment
 - e. I get a bonus for limiting antibiotic use
6. When I decide to stop treating I think about:
 - a. If I feel the calf is no longer sick
 - b. When the farm says to stop treating (protocol has ended)
 - c. If my supervisor would want me to stop treating
 - d. If I feel I will receive a financial reward
 - e. If I am satisfied with the success of the treatment
7. If a calf doesn't finish their milk, I determine if she is sick based on:
 - a. The financial reward structure of the farm
 - b. What my supervisor would think is the right decision
 - c. What I feel is the right decision
 - d. What the farm protocol says to do
 - e. What will make me satisfied that I did a good job
8. I choose the antibiotic treatment for a sick calf by:
 - a. Following what the farm says I should treat with (protocols)
 - b. The treatment that makes me satisfied that I did my job well
 - c. Choosing the antibiotic I think is best
 - d. Choosing the antibiotic my supervisor would want me to choose
 - e. Choosing the antibiotic I receive financial rewards for using

9. In determining if a calf is healthy I think about:
 - a. The satisfaction I get from keeping a calf healthy
 - b. The farm's protocols
 - c. What my supervisor would think is the right decision
 - d. My feelings about whether the calf is healthy
 - e. The financial reward structure of the farm
10. If a calf looks depressed, I determine if it is healthy by:
 - a. Following the protocols of the farm
 - b. Going with my feelings about the calf's health
 - c. Based on what my supervisor would think
 - d. Thinking about what allows me to feel accomplished
 - e. Making the choice I am most likely to be financially rewarded for

Funding Source and References

Funded by USDA:NIFSI: "Minimizing Antibiotic Resistance Transmission Throughout the Food Chain" and USDA:NIFA: "Integrating Biology, Psychology, and Ecology to Mitigate Antibiotic Resistance in Food Animal Production Systems". The Washington State University Institutional Review Board reviewed the project and gave it exempt status.

Berge ACB, Moore DA, Besser TE, Sischo WM. Targeting therapy to minimize antimicrobial use in pre-weaned calves: effects on health, growth and treatment costs. *J Dairy Sci.* 2009;92:4707-4714.

Leonard, N. H., Beauvais, L. L., Scholl, R. W. (1999). Work motivation: The incorporation of self-concept-based processes. *Human Relations*, 52, 969-998.