

## INTRA-FARM COMMUNICATION ON DAIRY CALF HEALTH

W. M. Sisco<sup>1</sup>, D.A. Moore<sup>1</sup>, M. A. Davis<sup>1</sup>, D. L. Moore<sup>2</sup>, J. Vanegas<sup>3</sup>, S. Kurtz<sup>1</sup>, K. Heaton<sup>1</sup>, D. Kinder<sup>1</sup>, J. D. Siler<sup>4</sup>, R. V. Pereira<sup>4</sup>, and L. D. Warnick<sup>4</sup>

<sup>1</sup>Dept. Veterinary Clinical Sciences, Washington State University, Pullman, WA; <sup>2</sup>Social and Economic Sciences Research Center, Washington State University, Pullman, WA; <sup>3</sup>Dept. Clinical Sciences, Oregon State University, Corvallis, OR; <sup>4</sup>Dept. of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, NY.

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### INTRODUCTION

Effective communication is essential in any organization for getting tasks accomplished, job performance, and job satisfaction. The dairy business is no different, particularly when animal health is the outcome and there are many people responsible for animal care. The U.S. dairy industry continues to consolidate production into fewer and larger operations, a national trend that is most marked in the western United States. The USDA reported a total of 65,000 herds in the United States in 2009 with over 5% having 500 or more cows, accounting for 56% of total milk cow inventory (USDA, 2010). Management on large dairies is evolving from an owner-operator model (owners involved with all aspects of the operation) to a distributed model where specialties within the operation have dedicated management and personnel. In a survey done by the National Milk Producers Federation (2009), on average, there were 5.6 workers on dairy farms in the US. One potential issue with large numbers of employees is where ambiguity about where the responsibility for prudent drug use lies, which reinforces the need for effective training that stresses the goals and outcomes for each antimicrobial drug use. In a study by Berge et al. (2009), calves treated for diarrhea following only a conventional therapy protocol (as commonly done by calf treaters) had 70% more days with diarrhea when compared to a targeted therapy where antimicrobial use for treating diarrhea was based on clinical signs (fever, depressed attitude and inappetence).

Change in dairies could be difficult to promote because producers are perceived to be “hard to reach” (Jansen et al., 2010a). Jansen et al. (2010b) suggested that dairy producers were not necessarily hard to reach but had different personalities that either may or may not readily accept outside information. Although extension veterinarians have shown the benefit of different communication or educational models when working on communication directly with dairy producers (Jansen et al., 2010a), larger dairies with many workers might require an alternative model. Kristensen & Jakobsen (2011) have suggested that veterinarians and other dairy advisors be trained in communication to help effect change. In a review of dairy management diseases, LeBlanc and others

(2006) noted that although we have made many advances in the science of disease prevention, the challenge remains to consistently and effectively implement appropriate management practices. However, even if a producer is convinced to make a change on the farm, implementation requires communication at all levels.

To effect change in drug use on the dairy farm, veterinarians and extension specialists must understand the communication structure, style and efficiency of any particular operation. Our research/outreach group has observed four important consequences of effecting change within large herds: 1) management structures of the dairies are complex, 2) more *decisions* on critical issues are made by middle management and workers than by owners, 3) communication between owners and workers is complex and indirect, and 4) relevant, science-based information for these specialized workers and management is essential to ensure that operations remain sustainable. These issues must be taken into account in order to provide effective messages for prudent drug use or any other management change. Our hypothesis is that larger, more complex dairy enterprises have different mechanisms and challenges for communication of management goals and policies and require a different educational approach compared to smaller farms. The purpose of this project was to describe the agreement of responses to questions about calf health events among workers, owners and veterinarians on large (greater than 500 milking cows) and small farms (less than 163 milking cows).

## On Farm Interviews

As part of a survey to describe on-farm communication regarding calf care, we used a multilayered, semi-structured interview process tested on dairy farms by Muger and Bitsch (2005). We interviewed people with different job titles on each farm, asking a series of questions about calf feeding and health. The interview tool consisted of four themes focusing on calf health goals, disease prevention practices, antimicrobial use, and identification and treatment of neonatal calf disease. Interviews included questions such as: (1) What are the current practices or protocols being employed on the farm? (to elucidate the level of agreement on disease prevention and treatment practices); (2) How does information about calf management and treatment reach the person responsible for disease detection, mitigation and therapy?; (3) What are the two most important goals for calf health?; and (4) How do individuals responsible for calf treatment learn new information and protocols to enable understanding and use?

## Description of Farms and Interviewees

A total of 52 farms of varying size were interviewed for the study: 27% had less than 50 pre-weaned calves, 25% had 50 to 99 calves, 25% had 100 to 349 calves and 23% had 350 or more calves on site. Three herds were in AZ, 3 in ID, 23 in NY, 2 in OR, and 21 were in WA. Of the 224 people interviewed, 17% were calf feeders, 13% calf managers, 8% treaters, 8% herd managers, 4% herdsman, 24% owners, 22% veterinarians, and 3% others. The median number of interviewees for each herd was 3 for farms with less than 100 calves on the premise and 5 for herds with more than 99

calves. Interviews were conducted in either English or Spanish. The primary language spoken at home for each interviewee by job title is displayed in Table 1.

### Calf Health Goals

Responses to health goal questions such as: "What would you say are the two most important goals for calf health?" were categorized into process or outcome goals (Table 2). Outcome goals refer to a desired end result (i.e., calf death loss <2%), while process goals focuses on techniques or strategies necessary to perform well (i.e., keep the hutch clean). Within each farm, consensus on goal themes ranged from 0 to 80% agreement, some of which were process goals and some of which were outcome goals. Calf caretakers were less likely to provide an outcome goal or more likely to provide a process goal compared to managers, owners and veterinarians. On 17.3% of the 52 farms, all interviewees had outcome goals.

Table 1. Primary language spoken at the home of interviewees by job category. Percentage distribution of answers presented by job title.

Job Title	Bengali n, (%)	English n, (%)	English / Spanish n, (%)	Portu- guese n, (%)	Spanish n, (%)	Spanish/ English n, (%)
Calf feeder	0 (0)	10 (26)	0 (0)	0 (0)	<b>28 (74)</b>	0 (0)
Calf mgr <sup>1</sup>	1 (3)	10 (34)	0 (0)	0 (0)	<b>18 (60)</b>	1 (3)
Calf treater	0 (0)	5 (29)	0 (0)	0 (0)	<b>12 (71)</b>	0 (0)
Herd mgr <sup>1</sup>	0 (0)	<b>12 (67)</b>	1 (5)	0 (0)	5 (28)	0 (0)
Herdsman	0 (0)	<b>6 (60)</b>	0 (0)	0 (0)	4 (40)	0 (0)
Owner	0 (0)	<b>54 (100)</b>	0 (0)	0 (0)	0 (0)	0 (0)
Vet <sup>2</sup>	0 (0)	<b>49 (98)</b>	0 (0)	1 (2)	0 (0)	0 (0)
Other	0 (0)	<b>5 (83)</b>	0 (0)	0 (0)	1 (17)	0 (0)

1.Mgr: manager; 2.Vet: veterinarian;

Table 2. Calf health goals coded as outcome or process goals by job title. Percentage distribution of answers presented by job title.

Job Title	Outcome Goal n, (%)	Process Goal n, (%)	No Goals/Blank n, (%)
Calf feeder	14 (18.4)	39 (51.3)	23 (30.2)
Calf mgr <sup>1</sup>	16 (26.7)	30 (50)	14 (23.3)
Calf treater	14 (41.2)	20 (58.8)	0 (0)
Herd mgr <sup>1</sup>	23 (63.9)	9 (25)	4 (11.1)
Herdsman	7 (35)	8 (40)	5 (25)
Owner	76 (70.4)	20 (18.5)	12 (11.1)
Vet <sup>2</sup>	86 (86)	11 (11)	3 (3)
Other	7 (58.3)	2 (16.7)	3 (25)

1.Mgr: manager; 2.Vet: veterinarian;

## Routine Calf Health Tasks

When asked if there were written protocols for managing calf health and/or treatment, 60% of interviewees said "Yes" but the level of agreement to this question within farm ranged from 50 to 100%. There was no difference in average percentage of agreement in herds with less than 100 calves on the premise (n=27) compared to those with more calves (n=26) (80.7% vs. 82%).

When asked "Who is routinely tasked (on a daily basis) with monitoring calves for health and disease?", 34% of calf feeders said they were responsible but also noted that calf managers and treaters were tasked with that responsibility (**Table 3**). Most (48%) of calf managers thought they had that responsibility while 38% of calf treaters thought they had that responsibility. From the owners' viewpoints, the calf feeders and treaters were primarily responsible (61% of owner responses).

Table 3. Who is routinely tasked (on a daily basis) with monitoring calves for health and disease. Percentage distribution of answers presented by job title. There may be more than one response from some individuals.

Who's tasked / interviewed job title	Calf feeder, n, (%)	Calf mgr <sup>1</sup> , n, (%)	Calf treater, n, (%)	Herd mgr <sup>1</sup> , n, (%)	Herdsman, n, (%)	Owner, n, (%)	Vet <sup>2</sup> , n, (%)	Other, n, (%)
Calf feeder	<b>22 (34)</b>	20 (31)	14 (22)	1 (2)	3 (5)	4 (6)	0 (0)	0 (0)
Calf mgr <sup>1</sup>	11 (22)	<b>24 (48)</b>	11 (22)	2 (4)	1 (2)	0 (0)	1 (2)	0 (0)
Calf treater	8 (25)	11 (34)	<b>12 (38)</b>	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
Herd mgr <sup>1</sup>	8 (31)	<b>9 (35)</b>	3 (12)	2 (8)	2 (8)	0 (0)	0 (0)	2 (8)
Herdsman	<b>5 (33)</b>	<b>5 (33)</b>	2 (13)	0 (0)	3 (20)	0 (0)	0 (0)	0 (0)
Owner	<b>22 (36)</b>	0 (0)	15 (25)	0 (0)	5 (8)	15 (25)	0 (0)	4 (7)
Vet <sup>2</sup>	<b>28 (33)</b>	20 (24)	14 (16)	1 (1)	4 (5)	15 (18)	1 (1)	2 (2)
Other	2 (14)	<b>3 (21)</b>	<b>3 (21)</b>	0 (0)	1 (7)	2 (14)	1 (7)	1 (7)

1.Mgr: manager; 2.Vet: veterinarian;

Table 4. Answers of interviewees to how are calf health records kept on the farm. Percentage distribution of answers presented by job title. There may be more than one response from some individuals.

Job Title	No records kept, n, (%)	Health cards, n, (%)	Notebook, n, (%)	Computer records, n, (%)	Marks on the hutch, n, (%)	Other, n, (%)	I don't know, n, (%)
Calf feeder	1 (1)	2 (3)	<b>26 (39)</b>	19 (28)	13 (19)	6 (9)	0 (0)
Calf mng <sup>1</sup>	1 (1)	7 (10)	<b>24 (35)</b>	19 (28)	12 (18)	5 (7)	0 (0)
Calf treater	0 (0)	6 (14)	<b>12 (29)</b>	11 (26)	9 (21)	4 (10)	0 (0)
Herd mng <sup>1</sup>	0 (0)	3 (8)	<b>12 (32)</b>	14 (38)	5 (14)	3 (8)	0 (0)
Herdsman	0 (0)	0 (0)	<b>7 (32)</b>	<b>7 (32)</b>	2 (9)	6 (27)	0 (0)
Owner	6 (6)	8 (8)	<b>32 (33)</b>	31 (32)	10 (10)	9 (9)	1 (1)
Vet <sup>2</sup>	5 (6)	7 (8)	<b>26 (31)</b>	23 (28)	10 (12)	4 (5)	8 (10)
Other	0 (0)	1 (8)	<b>5 (38)</b>	<b>5 (38)</b>	0 (0)	2 (15)	0 (0)

1.Mgr: manager; 2.Vet: veterinarian;

On questions about keeping records on calf health, treatment, and disease, 5.8% of the 224 respondents indicated that no calf health records were kept on the farm. Over 64% of the remaining people interviewed revealed that records were kept in a notebook and 58% of the respondents said their records were computerized (Table 4). As an example of the level of agreement on record keeping, on 21.1% of farms (11/52), all interviewees agreed on having computerized records and 26.9% agreed that there were no computerized calf health records (total agreement on 48% of farms).

## Health Concerns and Events

When asked: "Who do you talk to when you have a concern about the health of the calves?", 44% of owners talked to the veterinarian but only 20% of calf managers and 5% of the calf treaters talked to the veterinarian (Table 5). When asked: "What was the last problem with calf health?", themes from all the responses included: diarrhea (30%), none or blank (25%), respiratory disease (13%), other (10%), increased mortality (9%), salmonellosis (7%), bloat (4%), pinkeye (1%), or umbilical infections (1%). The responses varied by job title and within farm. Most of these problems occurred within the previous 12 months and were first identified by the calf manager or feeder, although there were intra-farm discrepancies as to who was first to identify the problem. The veterinarians and owners were the persons most commonly notified of the problem, and the veterinarian was the most likely person reported to decide what changes needed to be made, however the calf manager was the one most likely to make sure the changes were implemented (39%). Sixty-three percent of the respondents said the change made to solve the problem became a permanent change and 34% of respondents indicated that the veterinarian was notified that the problem was solved.

Table 5. Answers of interviewees to who do you talk to when you have a concern about calves health. Percentage distribution of answers presented by job title. There may be more than one response from some individuals.

Who talked to/ interviewed	Calf feeder n, (%)	Calf mgr <sup>1</sup> n, (%)	Calf treater n, (%)	Herd mgr <sup>1</sup> n, (%)	Herds -man n, (%)	Owner n, (%)	Nutri <sup>2</sup> n, (%)	Vet <sup>3</sup> n, (%)	No one n, (%)
<b>Calf feeder</b>	4 (7)	<b>21 (36)</b>	9 (15)	4 (7)	5 (8)	10 (17)	0 (0)	6 (10)	0 (0)
<b>Calf mgr<sup>1</sup></b>	3 (7)	1 (2)	3 (7)	10 (23)	6 (14)	<b>11 (25)</b>	1 (2)	9 (20)	0 (0)
<b>Calf treater</b>	0 (0)	<b>11 (52)</b>	0 (0)	3 (14)	2 (10)	3 (14)	0 (0)	1 (5)	1 (5)
<b>Herd mgr<sup>1</sup></b>	1 (4)	8 (29)	0 (0)	1 (4)	1 (4)	8 (29)	0 (0)	<b>9 (32)</b>	0 (0)
<b>Herdsman</b>	1 (5)	4 (20)	0 (0)	1 (5)	0 (0)	<b>7 (35)</b>	0 (0)	<b>7 (35)</b>	0 (0)
<b>Owner</b>	7 (7)	17 (17)	4 (4)	5 (5)	6 (6)	6 (6)	13 (13)	<b>45 (44)</b>	0 (0)
<b>Vet<sup>3</sup></b>	1 (1)	20 (24)	7 (8)	9 (11)	6 (7)	<b>35 (42)</b>	0 (0)	3 (4)	2 (2)
<b>Other</b>	0 (0)	<b>4 (31)</b>	0 (0)	1 (8)	2 (15)	3 (23)	0 (0)	3 (23)	0 (0)

1. Mgr: manager; 2. Nutri: nutricionist; 3. Vet: veterinarian;

## DISCUSSION AND CONCLUSIONS

These results show the complexity and the challenges of communication on dairies with layers of employees having different roles, skills and language preferences. The lack of an effective communication in all stratum of dairy calf management could have

direct impacts on production and health of calves, and create hurdles for the judicious and sustainable use of antimicrobial drugs in dairy calves.

Organizational communication satisfaction has been evaluated in many contexts. White et al. (1985) suggested that workers perceived congruence on job problems was related to their communication satisfaction (communication climate, superiors, organizational integration, organizational perspective, and personal feedback). This is a function of the organization (i.e., dairy farm) itself, and the dairy consultant can play a role in improving communication so that new management strategies can be implemented consistently and effectively. Important elements that can help improve team-based communication include: shared goals, which must be clearly articulated, understood, and supported by all team members; clear roles, that clarifies expectations for each team member's responsibilities and accountabilities; and lastly, mutual trust, which is vital so that team members can have open communication or continued exchange of information and ideas so that all members can establish and continue sharing a genuine sense of common purpose (Webber et al., 2002; Baker et al., 2006; Mitchell et al., 2012).

Effective communication is at the core of the team's work (Mitchell et al., 2012). Improving communication on the dairy farm requires continuous efforts by all team members, and effective tools to constantly identify areas that need improvement are essential. Measurable processes and outcomes are useful tools in a team's communication because they determine the level of success, help refine goals over time, and guide improvement. Using this approach, the team agrees on and implements reliable and timely feedback on successes and failures in both the functioning of the team and achievement of the team's goals. These are used to track and improve performance immediately and over time (Mitchell et al., 2012).

Although this study has pinpointed many bottlenecks in the establishment of healthy and effective communication for managing dairy calves, more research is needed to evaluate on-farm interventions aimed at improving effective communication.

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