

Animal Welfare Issues and Lameness

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History of Welfare Concern

History of Welfare Concern

- Earliest evidence dates back to
 - Greece in the 6th Century BC
 - Dogs were kept as companions by people of all social classes
 - Some received tombstones and funerals with touching epitaphs describing the mutual affection of the dog and its owner
 - Debate on use and treatment of animals was vigorous

D. Frazer, Understanding Animal Welfare, 2008.

History of Welfare Concern

- Pythagoras (530 BC) famed for the Pythagoras Theorem
 - one of the earliest radical voices for the ethical treatment of animals
 - Shared the notion that “Meat is Murder”

D. Frazer, Understanding Animal Welfare, 2008.

History of Welfare Concern

- Near the end of the 1700s
 - Multiple books (with radical views) appeared urging a complete abandonment of meat-eating
 - *Philosophical and Practical Treatise on Horses* (1791), John Lawrence
 - Called for legal recognition of “animal rights”

D. Frazer, Understanding Animal Welfare, 2008

Fast Forward to 20th Century

- In the decades following WWII
 - Farm animal production became industrialized
 - Tiers of cages for laying hens
 - Gestation stalls for sows
 - Individual crates and pens for veal calves
 - Latter 1990s
 - EU member countries moved to
 - Ban crates for veal calves
 - Require larger cages for laying hens
 - Eliminate use of gestation stalls for sows

US Welfare Laws Since 2002



Practices Banned in Recent Time

- Sow gestation stalls
 - Florida 2002, Arizona 2006, Oregon 2007, Colorado 2008
- Veal crates
 - Arizona 2006, Colorado 2008
- Tail Docking of Dairy Cattle
 - Outlawed in California 2009
- Foie gras
 - California 2004



"Prevention of Farm Animal Cruelty Act" (Proposition 2)

- California 2008
 - Passed by wide margin (63% yes vs. 36% no)
- Provisions of the Act
 - Animals must have sufficient space to lie down, turn around, groom, stretch limbs freely

Livestock Abuse Captured on Video

- Westland Hallmark Packing Plant in California 2/08)
- Livestock Market in Portales, New Mexico (6/08)
- The Veal Calf Slaughter Plant in Vermont (11/09)
- Conklin's Dairy Farm Video of Abuse (5/10)



Criticism

*Nobody likes it and nobody wants it,
but everybody needs it.*

These events and others similar to these, all captured by HSUS and others share the notion that our livestock industry is either unable or unwilling to police itself.

Problem Areas in Welfare of Cattle

Problem Areas in Animal Welfare

- Physical abuse of animals
- Neglect
 - Failure to provide feed and water, or to clean housing areas, treat diseases or assist at calving
- Housing conditions
 - Insufficient space, poor flooring or feed and water access, or conditions that may cause injury

DM Broom, Bovine Medicine, Diseases and Husbandry of Cattle, 2nd Edition, Blackwell Scientific Ltd., 2004, p. 953-967.

Problem Areas in Animal Welfare

- Poor husbandry practices and rough or careless animal handling
- Unnecessary or poorly executed physical alterations of animals for the benefit of farming practice (tail docking, ear notching and branding)
- Poor conditions and procedures:
 - During transport
 - At markets
 - At the packing plant

DM Broom, Bovine Medicine, Diseases and Husbandry of Cattle, 2nd Edition, Blackwell Scientific Ltd., 2004, p. 953-967.

Abuse and Neglect

- Few acts of abuse and neglect are conscious
 - Causes are usually
 - Ignorance fostered by tradition
 - An overwhelmed caregiver or owner
 - Animal hoarding is often a consequence of a person's sense of being overwhelmed
 - Underlying emotional or psychological flaws
 - Greed, drug problems, illegal weapons and gambling – (For example, Michael Vick)

What's wrong with this picture?



Nose-lead vs. Halter



Nose-lead is a distraction device, it should never be used without a halter



Halter is a restraint device

What is the most costly disease of dairy cattle?

Costs of Common Diseases - Herd Basis

Disease	Case Rate %	% Death per case	% Cull'd per case	Milk not made lb/case	Milk Discard lb/case	Extra Days Open days/case	Farmer labor hr/case	Vet & Drug \$/case	Cost/case in dollars	Herd cost/yr
Mastitis	40	1	7	275	300	9	1	15	\$262	\$10,490
Lameness	30	2	12	940	70	12	0.5	32	\$478	\$14,330
LDA	5	2	8	840	77	12	1	115	\$489	\$2,447
Ketosis	8	0.5	5	506	0	10	0.67	19	\$235	\$1,883
RPM/Retitis	15	1.5	6	550	248	15	0.67	20	\$325	\$4,871
Milk Fever	5	4	5	286	0	13	0.5	25	\$284	\$1,419
Dystocia	18	1	2.2	390	90	12	1	44	\$228	\$4,110

Guard, personal communication 2009.

Lameness: An Important Animal Welfare Issue



Understanding Animal Welfare

- In the context of livestock production
 - 3 Broad Questions
 - Is the animal functioning well?
 - Is it productive?
 - Is the animal feeling well?
 - Does the animal have pain or disease?
 - Is the animal able to live a reasonably normal life?
 - Can the animal express normal behavior?

MAG von Keyserlingk, et al., J. Dairy Sci., 2009. 92:4101-4111
Fazer, D. Understanding Animal Welfare

“Lameness in a “Nutshell”

- Larger herds, better performance, and confinement housing
 - Hard flooring surfaces
 - Less comfortable for cows
 - Promotes claw horn overgrowth
 - Predisposes to ulcers and white line disease
 - Constant exposure to manure slurry and moisture
 - Predisposes to interdigital and digital dermatitis

Confinement housing has caused us to lose touch with **natural or normal** cow behavior

Instead, what we observe is **common or adaptive** behavior

Adapted from comments of Dr. Neil Anderson, International Lameness Symposium, 2002.

Basic Concepts

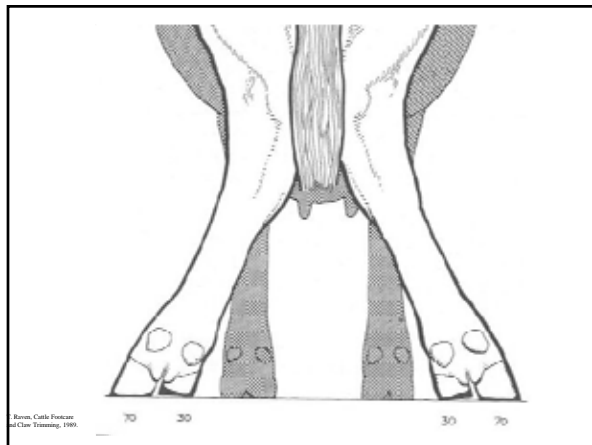
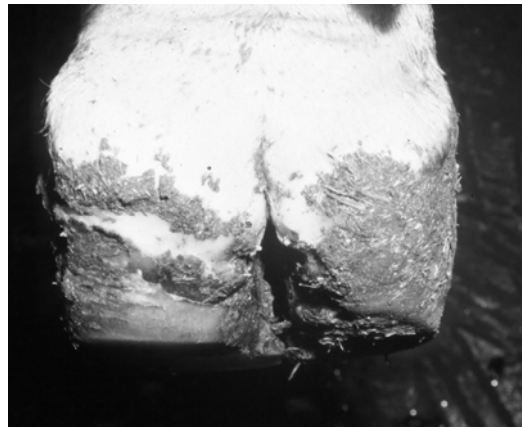
- Claw lesions – ulcers & white line disease
 - Causes are:
 - **Metabolic** (Rumen acidosis, enzyme induced and hormonal)
 - **Mechanical** (overgrowth and overloading)

LAMENESS IN DAIRY CATTLE

90% of lameness is in the foot...

90% of that in the foot involves rear feet,

of that, 70-90% involves the outside claw

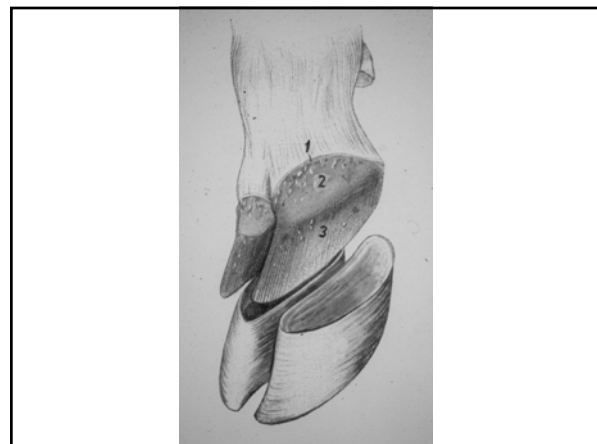
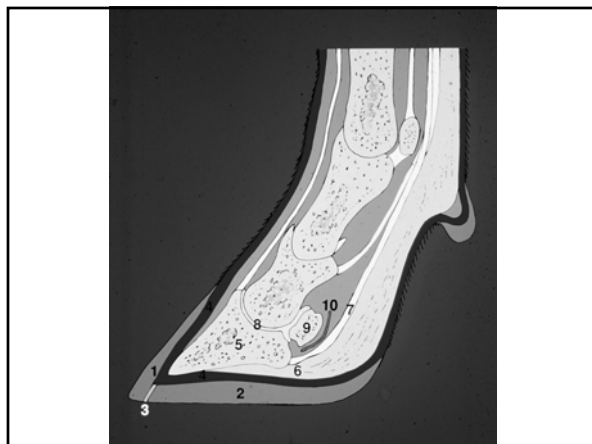


Laminitis

- Primary lesions
 - Sinking and Rotation of the third phalanx
 - Acceleration of Horn Growth
 - Production of poor quality horn



"Camped under" posture typical of acute laminitis



Suspensory Apparatus of the Bovine Claw

- P₃ is fixed in position by a series of collagen fiber bundles that run from the zone of insertion on the surface of the bone to the basement membrane



Ch. J. Lischer and P. Ossent, International Lameness Symposium, Orlando, FL, 2002.

Suspensory Apparatus of the Bovine Claw

- Laminitis
 - Loosening and/or elongation of the collagen fiber bundles leads to sinking of P₃

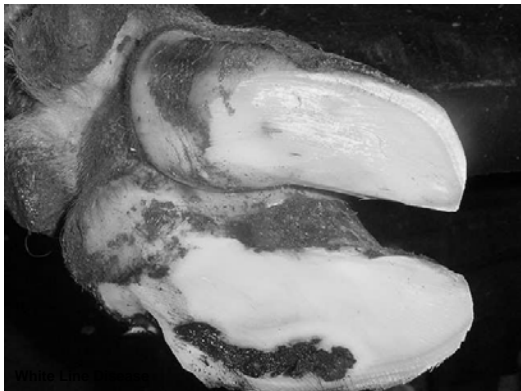


Ch. J. Lischer and P. Ossent, International Lameness Symposium, Orlando, FL, 2002.

Sole Ulcer



- 1 Heel
- 2 Sole
- 3 Wall (axial and abaxial)
- 4 White line (abaxial)



Laminitis causes weakening of the suspensory apparatus of P3

Mediated by Matrix Metalloproteinase (MMP) enzymes

Matrix metalloproteinases

Matrix metalloproteinases - 3 types

– Metalloproteinase-9 (MMP-9)

- The MMP most consistently found in conjunction with inflammation (acidosis induced laminitis)

– Metalloproteinase ProMMP-2

- The MMP responsible for physiological or pathological remodeling of connective tissue

– “Activated” MMP-2

- Normally involved in the mediation of collagen remodeling

Alternate Theories

• Activation of MMP-2 by “Hoofase”

- “hoofase” enzyme elevated in pregnant heifers near calving, (Tarleton and Webster, 2002).

– Caused weakening of the suspensory apparatus in 1st lactation heifers*

- Increased laxity
- Reduced rigidity
- Decreased load bearing capacity
- A clear deterioration in the structural integrity of hooves

** None of these changes observed in age matched maiden heifers (Tarleton and Webster, 2002).*

Alternate Theories

• Peripartum hormonal effects

- Weakness may be brought about by hormonal changes at or around calving (estrogen, relaxin), (Webster, 2002).



Implications?

Cow comfort during the transition period is essential for optimal foot health

• Time standing versus lying or resting

- Increased time standing versus lying caused a greater incidence of lameness (laminitis and sole uclers)

- Colam-Aimsworth, et al. Behaviour of cows in cubicles and its possible relationship with laminitis in replacement dairy heifers, *Veterinary Record* 1989;125:573-575 doi:10.1136/vr.125.23.573

Time Standing vs. Resting

Influenced by:

- Heat stress
- Overcrowding
- Stall size, design, bedding and grooming

Normal Resting Positions



The Narrow Resting Position



The Wide Resting Position



The Long Resting Position



The Short Resting Position

Photos courtesy of Dr. Neil Anderson

Space required based upon size and normal rising behavior

- Nose to tail length - 8 ft
- Imprint length - 6 ft
- Imprint width - 4 ft
- Lunge space required - 2 ft
- Front leg stride to rise 1.5 ft



The combined "imprint length" (6 feet) and "front leg stride to rise length" = 7.5 feet.

So, how does a 7 or 7 ½ foot stall work for a large Holstein Cow?

Stall Dimensions

- So,
 - Free Stall dimensions for Holstein-Friesian cows based on Faull and Hughes
 - Stall Length - against a wall
 - 10 feet (living space 8 ft, plus lunge space 2 ft)
 - Stall Length - stalls head to head
 - 8 to 8.5 feet (16 to 17 feet curb to curb)
 - Width: 4 feet (48 -50 inches)
 - No brisket board

Faull et al, Vet Rec, 1996,139(6):130-136

Stalls and Walking Surfaces

- Survey of stalls and walking surfaces on 37 farms
 - Based upon space needs for Holstein cows
 - 87% of stalls were too short
 - 50% of stalls were either too wide or too narrow
 - 91% of top partition rails were too low
 - 70% of bottom rails too low
 - Only 12% of stalls permitted real freedom of movement

Faull et al, Vet Rec, 1996,139(6):130-136

Stalls and Walking Surfaces

- Survey of stalls and walking surfaces on 37 farms
 - 75% of stalls had a concrete base
 - 63% of these stalls were judged to have less than adequate bedding
 - 11% had next to no bedding

Faull et al, Vet Rec, 1996,139(6):130-136

Higher prevalences and incidences of lameness were associated with inadequate lunge space, low bottom rails, high curbs and inadequate bedding

Faull et al, Vet Rec, 1996,139(6):130-136

What about stall size in the US?

- Survey of 103 herds (ave. 613 cows)
 - Wisconsin, California, New York, Minnesota, Michigan, Washington, Pennsylvania, Iowa, Idaho, Texas, Ohio and others
- Caraviello, DZ et al., Survey of Management Practices on Reproductive Performance of Dairy Cattle on Large US Commercial Farms, JDS, 89: 4723-4735.

Average stall size

103 midwestern herds

Close-up dry cows:
6.75 ft. long X 43.5 inches wide

Fresh Cows
7 ft. long X 45 inches

Caraviello, DZ et al., JDS, 89: 4723-4735.

- Cow comfort during the transition period
- Time standing versus lying or resting
 - Heat stress
 - Overcrowding
 - Stall size, design, bedding and grooming
 - Management factors
 - Time cows spend in lock-ups
 - Time in milking parlor holding areas
 - 3X vs. 2X milking
 - Group/pen sizes and parlor throughput

The Digital Cushion

- Heifers
 - Less fat (27%) in digital cushions compared with cows
 - Fat composed primarily of saturated fatty acids (less cushioning capacity)
- Mature Cows (2 plus lactations)
 - Digital cushions larger (38%) and contain more unsaturated fat (more cushioning capacity)

* Significance: Heifers may be less resistant to compressive load forces



Ch. J. Lieber and P. Ossert, 12th International Lameness Symposium, Orlando, FL, 2002.

Claws of heifers are less resistant to compressive loading forces

Studies show that there is a greater tendency for sole lesions to occur at the beginning of the 1st lactation

Christoph Muelling, University of Calgary

Thickness of the digital cushion was highly correlated with body condition scores

Prevalence of sole ulcers and white line disease was significantly associated with thickness of the digital cushion

Bicalho, et al., 9th Annual Fall Conference, Liverpool, New York, Nov. 12-13, 2008.

Bottom line.....

.....these data suggest that

“thin cows get lame”

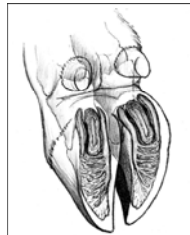
Bicalho, et al., 9th Annual Fall Conference, Liverpool, New York, Nov. 12-13, 2008.

Effects of Laminitis and Sinkage of P₃ on the Digital Cushion

Following Sinkage of P₃:

Fat content of the digital cushion is substantially reduced

Digital cushion is replaced by collagenous connective tissue and less fat



Ch. J. Lischer and P. Ossent, 12th International Lameness Symposium, Orlando, FL, 2002.

Ch. J. Lischer and P. Ossent, 12th International Lameness Symposium, Orlando, FL, 2002.

An evaluation of feeding records from commercial dairies in the UK suggests that feeding practices over the past 20-30 years have changed.

Feeding practices that would encourage dietary-induced acidosis and laminitis are much less common

Yet, incidence of foot problems over the same period has continued to increase

Whyte et al. 2003

In Summary,

- **Laminitis**
 - Interferes with normal blood flow to the claws
 - Causes inflammation and the release of enzymes that weaken the suspensory system
 - Specific effects:
 - **Sinking and rotation of the P3 bone**
 - » Predisposes to ulcers
 - **Acceleration of claw horn growth**
 - » Alters weight bearing within the claws
 - **The production of poor quality horn**
 - » Predisposes to white line disease

In Summary,

- **Weakening of the suspensory apparatus**
 - Alternative mechanisms
 - Hoofase – activator of MMP's (MMP-2)
 - Hormonal changes at calving –relaxin
- **Digital Cushion (the fat pad)**
 - Fat mobilization reduces size and integrity of the digital cushion

In summary,

- Housing systems and management practices designed to meet animal needs and that permit natural behaviors are likely to provide benefits to the welfare of the cow as well as performance and profit

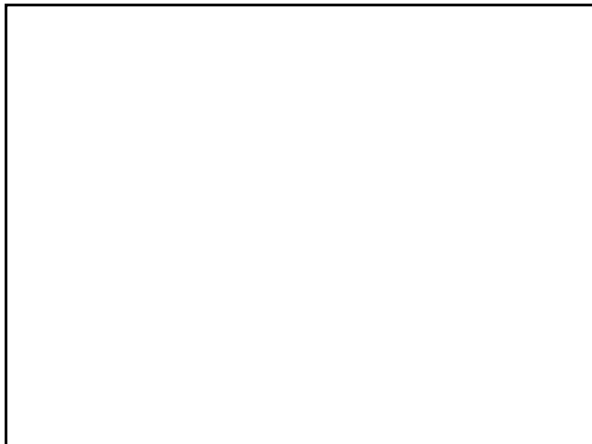
Take Home Messages

- Review your nutrition and feeding practices
 - Feed to maintain body condition throughout lactation and the dry period
- Maximize cow comfort
 - especially for transition cows
- Be sensitive to how long cows are standing versus lying and resting



"It is not the strongest of the species that survives nor the most intelligent, but the one that is most responsive to change"

Charles Darwin



ANIMAL WELFARE ISSUES AND LAMENESS

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WELFARE CONCERNS FOR LAME COWS

The primary concerns in animal welfare typically include 3 basic questions: 1) is the animal functioning well (in other words, is it producing well), 2) does the animal have pain or is it distressed, and 3) is the animal able to express or perform natural behaviors (Frazer, 2008; Von Keyserlingk et al., 2009)? Lameness negatively impacts the welfare of the dairy cow by all measures. It affects the animal's ability to function; that is, lameness reduces milk production and reproductive performance. Lameness causes pain as exhibited by an altered gait. And finally, lameness interferes with the animal's ability to express normal behavior. Lameness cows don't move about freely or confidently and they interact less with herd mates in activities such as estrus behavior or interactions intended to establish dominance or rank within the herd.

In addition to lameness are the factors that predispose to lameness. For example, conditions contributing to lameness such as dietary formulation and feeding errors, and reduced cow comfort resulting from poor stall design and maintenance, heat stress, overcrowding and transition management procedures that contribute to prolonged standing, and more. Indeed, these may be some of the greatest insults to the welfare of dairy cattle.

Welfare considerations also extend to severe lameness conditions where complicated lesions may require veterinary intervention or the need for a decision to euthanize the cow with a problem that is unlikely be improved with treatment. Cows with severe claw lesions requiring extensive corrective trimming could benefit from anesthesia of the foot and/or lower leg. However, unless the trimmer has training and access to lidocaine, it is unlikely that the cow will receive anesthesia for treatment of a painful condition. Proper management of claw lesions calls for a sharp hoof knife and a cautious hand. Once corrective trimming is completed, the application of a foot block to relieve weight bearing on the diseased claw is indicated. Foot blocks constitute one of the few and more important pain management procedures that can be offered to animals with lameness disorders. Aftercare and continued monitoring of lame cows is also important to a successful outcome from treatment. Time from onset to complete recovery from lameness conditions may be lengthy and thus follow-up is an essential component of foot care.

Confinement housing may present significant challenges to non-lame cows let alone those that may have a foot or leg problem. Open lots and/or special needs barns offer less restriction to cows desiring to rest or for those attempting to lie down or rise.

Lame cow herds or pens should be located close to milking facilities and designed to maximize comfort while minimizing effort required to get to feed and water. In short, improving the welfare of lame cows is more than just prompt diagnosis and treatment. It's also a matter of modifying housing and environmental conditions to accommodate animals during the convalescent period. Dr. Nigel Cook makes the statement that many cows "get lame – stay lame". His point is that part of a cow's potential for recovery has to do with our ability to make her comfortable and safe during the convalescent period. Finding ways to improve her comfort and better accommodate her needs just makes sense from a welfare as well as a performance and profit perspective.

PROBLEM AREAS IN ANIMAL WELFARE

Some of the major problem areas in animal welfare might be listed under the following general headings (Broom, 2004):

- Physical abuse
- Animal neglect: calculated, accidental or that arising from ignorance
- Inadequacies in design of housing facilities
- Poor husbandry practices and rough or careless animal handling
- Unnecessary or poorly executed physical alterations of animals for the benefit of farming practice (tail docking, ear notching and branding)
- Poor conditions and procedures during transport, at markets and at the packing plant

Physical abuse

The willful abuse of animals is uncommon and in its worst form conducted by those with sadistic views or tendencies. However, unconscious forms of abuse are relatively common and generally occur as a result of carelessness and/or ignorance. Whereas, one might consider the controlled-use of an electric prod for the purposes of motivating a down animal to stand acceptable; the continual uncontrolled goading of an animal that is unable to stand borders on willful abuse and animal cruelty. Sometimes the extent of *injury* is misunderstood or the animal's *will* to stand misinterpreted. Working with animals takes patience and understanding particularly when they are physically impaired.

Another area where physical abuse is common but rarely recognized as abuse *per se* is physical restraint. Controlling the head of a fractious or frightened bovine is important for both human and animal safety. Cows use their heads as a defense mechanism and will throw or swing them like a battering ram to fight or fend off advances by herdmates or other challengers. Restraint devices for stabilizing the head

of cattle come in a variety of forms on working chutes; but certainly one the simplest and best are the rope halter. It provides safe and secure restraint of the cow's head for most purposes. However, the experience of this author is that one of the most common forms of head restraint used on farms and ranches is the nose-lead. Pick up any book on animal restraint and one will learn that the nose-lead is intended to be used as a distraction device. It should never be used without a halter. Yet, out of convenience or ignorance people have become accustomed to using the nose-lead alone to restrain cows for treatment or other procedures. One of the outcomes of this approach to restraint is tearing and damage to the nose and nasal septum. This is a simple, but very common form of *unconscious* abuse that is so commonplace as to be considered normal practice. I use it here as just one example of an unintended form of abuse (albeit minor, but nonetheless significant) in bovines and oddly enough, the most frequent offenders are often those who are most familiar with cattle.

Animal Neglect

Neglect occurs primarily as a consequence of failure to provide basic needs for food, clean water, and prompt treatment of disease and injury. It is a reality that cattle in certain parts of the country must endure times where rainfall is short of that needed to provide adequate grass for grazing. In other areas, weather conditions are such that owners must rely on stored forages, winter grasses or supplemental feed to maintain their animals during the winter months. In either case, when periods of undernourishment result in starvation and owners have made little or no attempt to supplement their animals, they are guilty of neglect or in the worst case scenario animal cruelty. Low prices for cattle coupled with high costs for feed, fertilizer and other farming supplies and equipment make it very difficult to turn a profit and animals suffer as a result.

In recent years, urbanites in search of the country lifestyle have started a migration back to the rural areas. For many, a 5 or 10 acre parcel of land is sufficient to start a small farm. They purchase a few animals, but don't have all of the background needed to understand their nutritional, housing or health needs. In most cases, they have even less understanding of pasture management or the cost of good hay and other nutritional supplements. Problems with malnutrition and parasitism are not uncommon as people learn that there is more to maintaining animals than they realized. And, as most veterinarians have experienced, when animals become ill or injured in these situations, the lack of facilities to handle animals makes the tasks of examination and treatment nearly impossible to do safely. The neglect that occurs in these cases is out of ignorance and most surely unintentional, but nonetheless important.

Housing Facilities, Stalls and Floors

Despite years of effort to design cow friendly-facilities that are affordable and workable, we frequently encounter flooring problems and stalls that don't maximize comfort for cows. Concrete is either too smooth or too rough and abrasive. When it is smooth it contributes to falling and slipping injuries. When it is too abrasive, it

contributes to excessive claw wear and lameness in cattle due to thin soles and thin sole toe ulcers (Sanders et al, 2008; van Amstel and Shearer, 2005).

Poor stall design leads to less lying time and a greater incidence of lameness (Leonard et al, 1996). A survey of housing facilities on 37 farms in the United Kingdom by Faull and Hughes, found that when space needs for Holstein cows were considered: 87% of stalls surveyed were too short, 50% were either too wide or too narrow, 91% of top partition rails were too low, 70% of bottom rails were too low and only 12% of stalls permitted real freedom of movement. Results from the survey on stall and walking surfaces found that 75% of stalls had a concrete base, 63% were determined to have less than adequate bedding and 11% had next to no bedding. One might speculate that a similar survey here in the North America would have similar if not worse results.

The most common causes of lameness affecting the bovine digit are ulcers, white line disease, and traumatic lesions of the sole, including thin sole toe ulcers (TSTU) predisposed by thin soles due to excessive wear or over-trimming. Some of these conditions are predisposed by metabolic disorders including rumen acidosis and laminitis along with other physiological factors that affect the integrity of the suspensory apparatus of the third phalanx, particularly during the transition period. All are complicated by mechanical factors induced by life on hard flooring surfaces that contribute to lameness either by encouraging overgrowth and altered weight bearing, or by predisposing to traumatic lesions of the sole sometimes exacerbated by abrasive flooring conditions.

Rough or careless animal handling

An understanding of cattle behavior and proper animal handling are significant deficiencies on some dairies and cattle operations. Part of the problem stems from the multi-cultural nature of farm employees and their lack of previous experience with cattle. Training sessions in their native language to explain the concepts of flight zone, point of balance, and other factors associated with low stress cattle handling are needed. Those who work with cattle should also understand basic cattle behavior and characteristics of vision, hearing, smell, taste and touch in cattle. They need to be aware of basic instinctual responses and why animals naturally do what they do. Understanding generally fosters a greater appreciation and ultimately more respect by animal caretakers. Here lies a very real opportunity for veterinarians to improve animal care on farms.

Tail docking, ear notching and branding

Relatively few issues have created more controversy in recent years than tail-docking of dairy cattle. The procedure was originally developed in New Zealand during the 1990s to reduce the incidence of leptospirosis in humans (milking personnel). Ancillary benefits to the procedure were reported to include: improved comfort for milking personnel, cleaner udders and teats, reduced incidence of mastitis and improved milk quality. Research on tail docking failed to show a relationship between

leptospirosis titers in milking personnel and cows with docked tails. Likewise, to date no studies have been able to show a relationship between tail docking and reductions in the incidence of mastitis or improvements in milk quality (AVMA Backgrounder, Dairy Cow Tail Docking).

Welfare concerns associated with tail-docking are reportedly due to: acute pain, chronic pain, disease, and behavior. Observations of acute pain were associated with the banding procedure and subsequent ischemic damage to tissues distal to the band. Chronic pain was associated with neuroma formation in docked cattle observed at slaughter and in heifers post tail docking. A few animals have developed infections in the tail stump that led to tetanus and gangrene. For that reason, some recommend tetanus toxoid as a preventative measure if tail docking is necessary. Finally, cows are believed to use their tails for communication and signaling and fly control. Studies demonstrated significant differences in fly counts in cows with compared to those without tails.

Ear notching, tattooing, hot-iron branding, freeze-branding and RFID (radio frequency identification) tags are commonly used forms of permanent identification. Hot-iron branding, in particular has been criticized by some in the international community as an unnecessary alteration for the benefit of farming practice (Broom, 2004). However, this practice is maintained in some western states of the US because of open range grazing and the need for a permanent form of identification to prove ownership of lost or stolen animals. In fact, several states have strict laws regarding brands, including brand registration and brand inspections.

Poor conditions and procedures during transport, at markets and at the packing plant

Over the past couple of years, vulnerabilities within the US livestock industry have been exploited in the media by activist organizations, particularly the Humane Society of the United States (HSUS), People for the Ethical Treatment of Animals (PETA) and most recently by Mercy for Animals (MFA). Videos of mistreatment of animals at packing plants, livestock markets and on farms have tarnished animal agriculture's image. The veterinary profession and respective livestock industries have all rushed to condemn these incidents, and have since moved from a damage control mode to a proactive effort to increase awareness and improve welfare of animals throughout the livestock production system. These are discussed briefly in the following section.

Non-Ambulatory cattle and calves at markets and packing plants

The issue of non-ambulatory cattle was highlighted in 2008, by video coverage from the Humane Society of the United States (HSUS) displaying inappropriate handling and care of down cows at a southern California packing plant. This was repeated shortly thereafter at a livestock market in Portales, New Mexico. Graphic videos of down cows being abusively prodded with hot-shots (electrical devices designed to

motivate cows to stand or move) or picked up and moved with forklifts and/or skid steer loaders created a very negative image of the industry and its management of non-ambulatory animals. In November of 2009, HSUS released an undercover video from Bushway Packing, Inc. in Grand Isle, Vermont. Video footage captured calloused handling of calves, abusive shocking with electric prods and the alleged skinning of one of the calves before it was rendered insensitive. And finally, one of the latest videos was that of an Ohio dairy farm filmed by Mercy for Animals. The video shows lengthy footage of a farm employee physically abusing calves and cows by beating them with his fist, a wrench and in several scenes stabbing them repeatedly with a pitchfork. This latter video was particularly disturbing to watch. These are but a few of the undercover videos that exist displaying horrible mistreatment of animals. While these represent a small fraction of those in the industry, their examples have been damaging.

The United States Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) responded by tightening its restrictions on disposition of non-ambulatory cows requiring that any animal observed to be down at a packing plant be euthanized and its tissues be rendered and thus, prevented from entering the human food chain. This action essentially changed the interim rule on banning the slaughter of down cows at packing plants to make it law that any animal down at a packing plant be euthanized. One of the objectives the USDA ruling was to improve the welfare of down cows at packing plants, however, since cattle affected with Bovine Spongiform Encephalopathy (BSE) may demonstrate a variety of symptoms including being non-ambulatory, this ruling would also increase surveillance and detection of animals that might be affected with this disease.

The incidence of non-ambulatory animals based upon non-fed cattle reports from federally inspected plants during 1994 and 1999 were between 1.1% to 1.5% for non-ambulatory dairy cows and 0.7% to 1.1% for non-ambulatory beef cattle (Smith GC et al. 1994; Smith GC, et al. 1999; Stull CL, et al. 2007). During 2001, of 7,382 non-ambulatory fed and non-fed cattle arriving at 19 packing plants in Canada, 90% were dairy cattle (Doonan G, et al. 2003). Furthermore, this study reported that less than 1% of the non-ambulatory cases developed during the transit process. Nearly all developed the non-ambulatory condition on the farm of origin. There are a few medical reasons why the downer cow condition is more common in dairy cattle, but there is no good justification for the transportation of animals with a high probability of becoming recumbent. Dairymen, in particular must be careful to avoid transporting animals unfit for travel.

While there is so much more that could be written here, suffice it to say that there are many potential welfare issues. We must continue to be vigilant in our efforts to see that animals are treated with dignity and respect. In the short time that welfare has moved to the forefront of concern in livestock production, we've witnessed significant change for the better in the treatment of animals. Welfare needs to remain a high priority. The sustainability of our livestock industries absolutely depends on it.

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