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# Dairy Cow Welfare: Some Observations and Specific Issues

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## Introduction

Issues of animal welfare have played a significant role in the veterinary profession since its inception. The oath taken by veterinarians states (in part): "Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health, the relief of animal suffering, the conservation of livestock resources, the promotion of public health, and the advancement of medical knowledge." Veterinarians contribute daily to the protection of animal health and relief of animal suffering, both by caring for diseased animals and by improving animal husbandry and disease prevention.

In dairy production agriculture, both the dairy industry and the veterinary profession are being called to consider and address issues of animal care in new ways and with a new urgency. Driven by consumers, public policy, and advocacy groups, animal agriculture is under more intense scrutiny regarding its animal management practices. It is not a productive stance to assert that no problems exist with animal welfare in the dairy industry. As is true of all significant arenas of human activity, there are specific cases of abuse that no one in the profession would find tolerable. There are also, however, issues of standard practice that have been challenged from an animal welfare perspective that deserve review by the veterinary profession. It may be that some of these practices are fully acceptable as is (but need to be better explained to a largely naïve citizenry), some may need to be modified in ways that preserve the basic system but improve its welfare characteristics, and some may need to be ended.

In the midst of this next phase of what has always been a continuing and productive process of improving animal welfare by the veterinary profession, the veterinary profession must not lose sight of the fact that some advocacy groups do not share the same points of view. Some will choose to attack the dairy industry on welfare grounds with the only slightly concealed goal of eliminating the dairy industry altogether, or of re-shaping it to match other non-welfare goals relating to the social structure of agriculture. There will always be some who advocate "welfare" ideals for whom no commercial production system will ever be acceptable. Extreme positions that do not need to consider trade-offs among multiple societal goals will always be easier to advocate than the reasoned, middle position of compromises between competing social needs. Fortunately for the dairy industry, the desire to produce an abundant, wholesome supply of food for consumers is rarely at odds with the goal of improving the welfare of the animals with which veterinarians work.

## **Perceptions of the dairy industry**

The public in general (and particularly in Minnesota) has a positive impression of the dairy industry. Images of dairies and of cows on pasture suffuse our culture. Even large computer manufacturers use the color pattern of Holstein cows to elicit a positive “down-home” image for their products. The cultural image is increasingly archaic in terms of actual production systems (e.g. images of modern freestall dairies probably do not come to mind for a typical urban citizen), but the overall image is one of contented cows and wholesome food.

This positive image rests in no small part on a foundation of personal contact with dairy farming, through extended families in the industry, visits to fairs, “petting farms”, school trips, etc. Fewer and fewer people have actually set foot on a working dairy, and for most people commercial production agriculture is becoming a more distant and unknown thing. With the loss in familiarity comes increasing uncertainty, questions, and the potential for distrust. Opinions can be more easily manipulated by shocking images, extreme examples, and distorted or inaccurate characterizations. Different value systems may be brought to bear. There is a battle of perceptions being fought regarding commercial agriculture of all sorts, and the production industries themselves are often ill equipped and inexperienced for the fight. What seems normal, necessary, and self-evident to people in the industry can be used to manipulate public opinion in surprising ways.

For example: the Farm Sanctuary web site [FactoryFarming.com](http://FactoryFarming.com) shows a picture with the caption “A dead cow is left outside on a southern California dairy to be picked up by the renderer (and then used for products such as animal food, fertilizer, cosmetics, etc.)”<sup>1</sup> Dairy veterinarians would think nothing of this image if seen in their daily routine (like all life forms, cows sometimes die, and the body needs to be dealt with), but for a naïve audience, it may seem shocking. The homepage of PETA’s [MilkSucks.com](http://MilkSucks.com) states, in part, “To keep milk production as high as possible, farmers artificially inseminate cows every year.”<sup>2</sup> This is not a new fact for anyone with even a limited knowledge of the dairy industry, but it may sound objectionable to the “person on the street”. A different PETA site states “At least half of the 10 million cows kept for milk in the United States live on factory farms in conditions that cause tremendous suffering to the animals. They do not spend hours grazing in fields but live crowded into concrete-floored milking pens or barns, where they are milked two or three times a day by machines.”<sup>3</sup> It may seem normal to us that cows are milked by milking machines, but to PETA those machines can be used to galvanize opposition to dairying: “Milking machines often cause cuts and injuries that would not occur were a person to do the milking.”<sup>3</sup> What is an uninformed urban resident facing such a slick marketing campaign to believe?

### **Public policy effects:**

Concern about animal welfare, both legitimate concern and concerns used as manipulative levers for other agendas, can lead to changes in social perceptions, laws and administrative policy that can have far reaching impacts on the dairy industry. Beyond traditional laws and social morays against animal cruelty, there are growing efforts to influence consumer choices based on perceived animal welfare issues and to enact legislation and promulgate regulations to influence how animals are raised, managed, and slaughtered.

As an example, in Minnesota, a major legislatively mandated and funded “Generic Environmental Impact Statement” of the state’s animal agriculture industries was finalized in 2002. The project included a report on the topic of animal welfare that was meant to inform policy makers. The person hired by the state to write the report on animal welfare issues was Marlene K. Halverson, who describes herself as “an agricultural consultant with a background in alternative swine production systems developed around criteria of pig welfare.” Her 324 page report is available on the web.<sup>4</sup> The process was such that while the final findings of the GEIS committee were open to public comment before being finalized, her report was not. She states in her report that “the concerns presented in this paper are selected from issues raised by animal welfare organizations that are advocating reforms to contemporary animal farming practices. The various concerns of these organizations are taken to be representative of concerns of members of the broader public that are concerned with the welfare of farm animals.”<sup>4, page 9</sup> Among those organizations whose concerns she used as guides was PETA, an organization expressly opposed to all animal agriculture in any form and the Animal Welfare Institute, whose web site states: “increasingly, farm animals are raised in close confinement in “factories” where they suffer severe deprivation. AWI works to halt these intensive farming practices and replace them with methods which are both humane and practical.”<sup>5</sup>

Ms. Halvorsen’s report includes recommendations that many policies be “affirmed and legislated”. These include recommendations that all animal be housed in such a way that they can lie “in full lateral recumbancy” and provide “opportunities and materials for exploration and play”.<sup>4, page 320</sup> She further recommended that “there shall be no transport to slaughter or disposal of pregnant animals”<sup>4, page 321</sup> and that the law “require producers to have one or more people at their facilities trained and certified as animal welfare officers.”<sup>4, page 321</sup> This report has been forwarded to the Minnesota Legislature for consideration and action.

In parallel efforts, animal rights and anti-commercial agriculture groups have mounted major public relations and media campaigns aimed at forcing corporations that market animal products to respond to their view of commercial animal production. Again using PETA as an example (PETA hosts over 50 anti-animal use web sites), campaigns have been launched with some impact on companies such as McDonalds and Burger King and several grocery chains. Ironically, while PETA’s “MurderKing” site exclaims “Victory: Burger King campaign is over”<sup>6</sup> and excoriates Burger King for its policies, another PETA sites actually hosts advertisements for Burger King’s new “Veggie Burger” and provides the address of the CEO of Burger King to thank him for the new menu choice.<sup>7</sup>

### **Understanding policy-making<sup>8</sup>**

Policy emerges at the interface of science and politics. Policy comprises legislation, regulation and the will of the government to proceed (influenced by the executive branch) in enforcing existing regulations. Policy making moves slowly in general, with spurts of activity in response to crises (real or perceived). Policy-makers are our elected politicians and the regulatory staff members within administrations who are given the task of writing the regulatory rules and procedures that will enable policies to be implemented. Politicians have varied motivations, but nearly all are concerned about re-election and are thus constantly on the lookout for a visible problem to “solve”.

Politician's positions are guided by their staff, often filled by the best and the brightest political science majors; young people enthused by their positions, eager to have an impact, and often not particularly well trained in science. Thus their approach will often be molded by the same bias as "the man on the street" and thus susceptible to the same media influences discussed above. Few politicians or staff understand the complexities of biology, agriculture or veterinary medicine.

In the administrative ranks, career civil service attracts a wide array of intelligent and committed professionals. Their job is to administer, not to lead, and people in these roles are often loath to proceed far ahead of the legislated limits. The leadership of government agencies, however, is usually entrusted to political appointees, some of whom have political aspirations of their own.

In this operating environment, new policies often emerge out of political opportunism. Crises, real or created, provide opportunity for visibility and leadership. Politics are local, and a politician may choose to support a poor policy that has little direct effect on their urban constituency, but which in the heat of a media campaign has broad, if ill-informed, support. Most constituencies are, self-evidently, urban.

Change in any industry comes about for one or more of the following reasons:

- Industry responds because it is the right thing to do or in response to broad social changes
- Industry develops new practices because they are more profitable (changes in production technology, etc. This leaves older and less progressive firms in the mix of firms for a while)
- Government regulates and requires change
- Consumers or downstream businesses (e.g. food distributors, retailers, restaurants) demand change

In the controversy over what is best in terms of production agriculture and animal welfare, the struggle is being waged in each of these levels, with the most activity currently happening at the level of consumer influence. For advocacy groups, media campaigns attract new members and funding. They have found that influencing a critical mass of naïve people is far easier than changing regulation and have focused their attention there.

### **Spectrum of values regarding farm animals**

Underlying the specific issues about animal welfare, there are values held by advocates of any particular position. The spectrum of those values might be characterized crudely into four value propositions.

1. Animals are private property and the owner may do whatever they like to their property.
2. Animals may be used to benefit humankind, but humans are stewards of those animals and should inflict no unnecessary harm.
3. Animals should have a right to pursue their natural behaviors and live in a natural environment and humans may only use them in that natural context, again without inflicting unnecessary harm.
4. Animals have the right to be free of interference or control by humans. Humans may not use animals for their benefit (economic, entertainment, religious, emotional). In particular, humans should not raise animals for food.

The view that animals are private property is well established in certain contexts in our culture and our laws. It is not, however, acceptable as the sole basis for animal welfare considerations. Both cultural norms and the law argue that there are extremes of abuse and ill treatment of animals that private property rights do not excuse.

The idea that animal owners have a responsibility to serve as the stewards of their animals is long established and probably represents the prevailing value and the ethical basis of routine practices of most people working in animal agriculture. The continuing issue of reconciling other constraints with the desire to foster animal welfare has always been present in production agriculture and will always be. What may have once been seen as normal and acceptable practice may evolve to be seen as unacceptable. Economic constraints also play a role in determining what is feasible for producing food from animals, but as our general society has become wealthier and policy makers enjoy more disposable income, economic considerations are often discounted as irrelevant. These policy makers rarely come from the lowest socio-economic sectors of society, where the cost of food is an important issue.

In addition, there is another tension operating in decisions about animal production systems that confounds the challenge of finding the best path forward. Relatively speaking, it is easier to make judgments regarding practices that are unacceptable if inflicted to the direct detriment of an individual animal (e.g. beating or deliberately starving an individual animal) than for practices where no individual is singled out to its detriment, but there is a known statistical risk of problems within the production system. For example, can dairy cows be housed on bedded mattresses instead of sand in freestalls if one knows that the incidence of lameness will be higher in the cows on mattresses? Can cows be kept on pasture year 'round if one knows that the rates of heat and cold stress and parasitism will be higher in those animals than in animals in confinement?

The idea is initially appealing that animals should have a right to pursue their natural behaviors and live in a natural environment and humans may only use them in that natural context, again without inflicting unnecessary harm. Applied consistently, however, this value system would argue against domestication itself. At one level, one might argue that dairy cows should have the opportunity to move freely (no stanchions), socialize (group housing) and have access to food and water at all times. These management systems would provide the cow the ability to pursue a certain set of natural behaviors. If one takes this logic further, however, bulls should have access to cows at all times, be able to fight with other bulls for dominance, all cattle should be free to wander at will, cows should be able to fight with horns, calves should be co-mingled with all other age groups, and certainly no cow should have something as unnatural as a milking machine attached her udder. In practical application in domestic animals, the idea of allowing natural behaviors and the idea of stewarding animals in the context of serving human needs inevitably meets somewhere in the middle and compromises need to be made.

The final value proposition, that humans may not use animals for their benefit (economic, entertainment, religious, emotional) is one that argues against any domestic animal use for any purpose. It argues against the history of human civilization and its long and close interactions with animals of all sorts. Humans have long been enriched by including other animals in their lives and it seems doubtful that such connections will ever be severed. The notion does,

unfortunately, have a sophomoric appeal and internally consistent logic for those who perceive no positive relationship between humans and domestic animals.

### **Specific issues:**

Against this backdrop of social advocacy and changing cultural perceptions, the dairy industry is being called to explain and justify many of its routine practices, some of which are performed or taught by the veterinary profession. This environment means that veterinarians themselves need to think about and be prepared to respond when others ask for their experience and their opinions relating to the welfare of animals in the dairy industry.

### ***Tail docking***

Docking the tails of dairy cows is a practice that started in New Zealand, originally intended to reduce transmission of Leptospirosis to milkers. Leptospirosis is a bacterial disease that can be transmitted from cows to humans. It is shed in the urine of infected cows, often for extended periods of time, and can infect humans if the organism comes in contact with broken skin, mucous membranes, or the conjunctiva of the eye. In a survey of dairy farm workers in New Zealand, one third of the people who milked cows had elevated serum titers to *Leptospira*. Of those 72 percent were positive to *Leptospira hardjo* and 44% to *Leptospira pomona*. *Lepto. hardjo* prevalence was most correlated with milking cows, particularly in parlors, while *Lepto. pomona* prevalence was more closely correlated with keeping pigs.<sup>9</sup>

The same *Leptospira hardjo* that can infect people is widely prevalent on U.S. dairy farms. A recent survey for the presence of *Leptospira borgpetersenii* serovar *hardjo* (type *hardjo bovis*) using microscopic agglutination testing of serum and fluorescent antibody testing of urine in 44 herds has shown an overall herd level prevalence of 59% (26 positive herds; 36% (Ohio), 55% (Florida), 55% (Washington / Oregon), and 91% (California)).<sup>10</sup> The *Lepto hardjo* in the commercial vaccines is *Lepto interrogans* serovar *hardjo* (type *hardjoprajitno*), not *hardjo-bovis*. Commercial vaccines are not particularly effective against *Lepto hardjo-bovis*. A vaccine with limited availability in the U.S. has been shown to reduce or prevent infection and shedding in cattle.<sup>11</sup> In recent months, veterinarians have increased surveillance for the *Lepto hadjo-bovis*, submitting samples to detect the organism shed in the urine. For submissions to her laboratory at Michigan State University in the period from January to April 2003, Dr. Carole Bolin reported that 119 of 249 herds (48%) submitted had at least one animal shedding *Lepto hardjo-bovis* (personal communication, April 21, 2003). Of the total of 2,722 animals tested, 296 (11%) were shedding the organism. While the nature of the herds submitted means that these results do not necessarily reflect the general prevalence in all dairy herds, it does confirm that the organism is very prevalent and being shed in dairy cows' urine.

Now a common practice on U.S. dairy farms, the general motivation for docking cows' tails relates principally to the convenience and comfort of the people who milk cows. Anyone who has been hit in the face by a manure or urine laden tail or dodged a dirty tail while attaching a milking machine in a parlor understands this point of view. A survey of 234 Australian dairy farms (pasture based systems, parlor milking) showed that 35% of dairies docked their cows' tails, a majority (75%) by using rubber banding as the preferred technique. Respondents that docked their cows' tails believed that docking was very important for operator (milker) comfort and that docking cows allowed milking to be finished quicker, reduced the risk of Leptospirosis

for the operator and mastitis for the cow, and made the cows easier to handle. Both groups (those that docked and those that did not) agreed that intact tails could cause significant discomfort to the operator and that the procedure caused at least acute discomfort for the docked cow.<sup>12</sup> Concerns remain about the cow's need for a tail to repel flies and perhaps to serve as a means of social communication.

In a New Zealand study of the effect of docking on behavior, no difference was observed in cows at low fly loads. At high fly loads, docked heifers showed more tail flicks (3 times more), but no increases in front focused behavior (stomping). ACTH stimulation tests showed no increase in chronic stress in docked heifers.<sup>13</sup> In a more recent study, also in New Zealand, calves were tail docked either using rubber rings or a docking iron (cautery) with or without local anesthetic. Docked calves (blocked and not blocked) showed signs for several hours after the ring was applied (tail shaking and vocalization). "These observations suggest that mild distress was experienced by approximately two thirds of docked calves." Based on cortisol levels, docking by either method "was no more distressing than control handling and simulated docking. A small proportion of calves in control and tail docked groups exhibited larger cortisol responses, the magnitudes of which suggested that they experienced some mild distress. There was no detectable benefit with either method of docking when local anaesthetic was used. The rubber ring is the preferable method, as there was some haemorrhage after docking with the docking iron."<sup>14</sup>

Behavior of calves docked with rubber rings at 3-4 months old (with or without anesthesia) suggested that calves experienced mild distress (more tail shaking and vocalization) during the five hours after docking when the calves were observed.<sup>15</sup> Research in a small study in a tie stall barn found that docked cows were more clean than undocked cows. Docked cows showed more fly-avoidance behaviors and had higher fly counts (stable flies, *Stomoxys calcitrans*, on legs) recorded than undocked cows. Immunologic tests showed no difference between docked and undocked cows.<sup>16</sup> An earlier study by the same group banded primiparous heifers (one month before calving; with and without anesthesia). A variety of behavioral and hematologic evaluations were made, and the authors concluded that "tail-banding had little effect on cortisol, immune measures and behavior." Removal of the necrotic tail 6 days after banding increased plasma haptoglobin concentrations.<sup>17</sup> Recent research in Wisconsin in preparturient heifers (2 - 4 months before calving, followed for 6 weeks) showed no difference in behavior, cortisol levels, or hematologic parameters between heifers docked versus those not docked, both with and without anesthesia. In calves docked at 7 - 42 days old (and followed for 10 days), the calves from the 21 - 42 day age group showed more restlessness after docking than controls. In younger calves, no difference in behavior was detected.<sup>18</sup>

It has been argued that cows whose tails are docked will be cleaner (tails will transfer dirt, urine, and feces to the body and udder) and the rate of mastitis will be reduced. A small study done in New Zealand on 15 sets of twin heifers showed that docked heifers were slightly cleaner than their twin with an intact tail (pasture system). Plasma cortisol levels were elevated at 6 hours after the procedure, but not at later samples. The docked cows had more biting flies on them in the peak fly season of summer. Swelling was present in the tail proximal to the site of rubber ring placement for as much as ten days, with more swelling in cows (as opposed to heifers or calves where there was little swelling) and more when the ring was placed in the middle of the bone as opposed to at the joint. Milk production over the lactation was not affected. The author concluded his report with the statement that "As milk production is not affected and the degree

of inconvenience to the animal appears minimal, the comfort and convenience of the milker may well become the paramount consideration in deciding whether or not to dock.”<sup>19</sup>

In a study in one freestall dairy in British Columbia where a convenience sample of cows (275; those readily caught) were docked and the remainder (212) were left undocked, no difference was detected in cleanliness of cows or the somatic cell count or rate of clinical mastitis. Cow cleanliness in general in the herd improved over the observation period; whether this is a result of docking or other management changes is not known.<sup>20</sup> A more recent, large scale study in six freestall herds in Wisconsin followed docked and undocked cows in herds for 8 – 9 months after randomly allocated docking of cows. The study found that there were no significant differences between the docked and undocked cows for somatic cell counts or the prevalence of contagious, environmental, or minor mastitis pathogens. Culling rates were not different. Cleanliness scores of the cows (udder and leg) were not different.<sup>21</sup>

Looking across these research findings, it seems fair to say that research thus far shows that docked cows may not be particularly cleaner (North American data) or maybe slightly cleaner (NZ data) and that mastitis is not reduced (North American data) in docked cows. Research also shows that cows are not particularly stressed or harmed by the docking procedure itself, if it is done properly. There are a few short term behavioral changes (tail motions, treading, etc.) that subside fairly rapidly (days). Corticosteroid levels are not significantly increased. Using anesthesia for the procedure has little if any effect. Concern has been expressed regarding the cow's ability to fend off flies once their tails are docked. Pastured cows (NZ data) show signs of being more bothered by flies and stabled cows in the U.S. show similar behavior at times of peak fly numbers. In sum, it seems clear that having cows' tails docked is widely preferred by the people who work with them. The question of the role of docking in protecting worker health is less clear. The preponderance of the data support the conclusion that the procedure itself and the cow's life thereafter seem to be minimally affected under conditions that prevail on U.S. commercial dairies. Anecdotal experiences would argue that for herds that dock tails, veterinarians should work to assure that the procedure is properly done. There is little evidence to argue that anesthesia is needed. It may be that the industry should move toward removing less of the tail, i.e. only the very end that interferes with workers, leaving the cow with more tail for fly avoidance and social signaling.

The decision about docking seems to be a matter of values as to which interest should prevail in this regard. Can dairies surgically alter a cow's tail for the milker's comfort? Is this “mutilation” or a minor procedure? If viewed as an “unnatural” alteration in the cows' lives for the convenience of the humans who work with them, is it fundamentally different than confining them (whether by fences or in a building), milking them with a machine, separating calves from cows at birth, or restraining cows on a tilt table or in a chute to trim their feet? Is it fundamentally different than the decision to castrate bull calves or dehorn cattle?

### ***Castration***

Male calves are generally castrated unless destined for breeding purposes. There are a variety of surgical and non-surgical techniques used. Castrated animals are generally preferred in feedlots because they are less aggressive and exhibit no sexual activity, thus protecting both humans and other cattle. There is also some preference for the meat of steers over intact bulls. An excellent

review of the effectiveness of various procedures and animal welfare issues relating to castration is available.<sup>22</sup>

Research concerning the welfare aspects of castration has shown that the cortisol levels of calves after castration are generally elevated initially, but generally return to normal levels in less than a day regardless of the technique used for castration. Cortisol levels are also increased by simply handling bull calves, in the absence of castration. The results of different studies have varied in terms of which approach to castration causes the least effect and studies are also confounded by the size of the bull / bull calf. Cortisol levels were less elevated following banding for castration, but remained elevated longer. Behavioral observations of abnormal behavior (assumed to be associated with pain) are not always consistent with the cortisol data in studies. There is some decrease in average daily gain after castration, compared with controls, mostly in the first week following castration. It appears that the effects of castration using banding persist longer than for other methods.<sup>23,24</sup> In the latter study in one week old calves, the authors concluded that “Unless better methods for recognizing and assessing pain show that surgical and Burdizzo castration give rise to significant amounts of chronic pain, both appear to be less painful methods of castration for young calves than either rubber ring or the combined rubber ring and Burdizzo methods.” In general, younger calves appear to be less negatively affected by castration than more mature bulls and castration is probably best done as soon after birth as practicable. Local anesthesia is recommended for castration in any bull calf older than 2 – 3 months old. In the United Kingdom, the law requires that animals older than 2 months must be castrated by a veterinarian and anesthetic must be used.

The AVMA Policy on castration and dehorning of cattle states: “The AVMA supports the use of procedures that reduce or eliminate the pain of dehorning and castrating of cattle. These procedures should be completed at the earliest age practicable. Research in developing improved techniques for painless, humane castration and dehorning is encouraged. In addition, it is recommended that viable alternatives to castration and dehorning be developed and applied.”<sup>25</sup>

On dairy farms, where bull calves are typically easily accessed (i.e. not loose with the cow on a pasture like beef calves), it seems reasonable to urge that all bull calves not meant for breeding be castrated before being weaned. It appears that quick surgical castration or the proper use of a Burdizzo at this age may be the preferred techniques. There are not good data to indicate an advantage for using local anesthetic if done at an early age.

### ***Dehorning***

Dairy animals are nearly universally dehorned in the U.S. Dehorning in young calves when the horn bud is just identifiable is also called disbudding. Dehorning reduces injury to other animals and to humans who work with cattle. It also makes it easier to manage cattle in catch systems like chutes and self-locking feed bunk catches. It is accepted by all that dehorning causes short term pain or discomfort to calves. This short term pain may be outweighed by the long term benefit of avoiding injury to all cows in the herd or to the people who work on the dairy if cows still had their horns.

Measurement of the effect of cautery dehorning in 8 week old calves on feed intake and growth found no difference between dehorned and non-dehorned calves, but did demonstrate brief increases in plasma cortisol.<sup>26</sup> Cortisol responses to dehorning consistently show a brief increase

in cortisol for several hours after the procedure.<sup>27</sup> Cortisol elevations were more prolonged after scoop dehorning than after cautery. Local anesthetic reduced the cortisol increase in dehorned calves in this study. The authors concluded that cautery was preferred over scoop dehorning in 6 week old calves. In another study, the researchers found also that dehorning caused a transient increase in cortisol and behaviors indicative of discomfort in calves dehorned at 4 weeks by dehorning paste and at 8 weeks by cautery.<sup>28</sup> Again, cautery seemed the less noxious. Local anesthetic reduced both cortisol levels and signs of discomfort. In another, older study, there were no differences in cortisol level between cautery dehorned calves with and without local anesthetic.<sup>29</sup> while a more recent one showed advantages to local anesthetic.<sup>30</sup>

As a general rule, veterinarians should urge clients to have all animal dehorned before weaning. Cautery seems to be the preferred method, with local anesthetic used. The technique for blocking the cornual nerve is simple enough that many clients could be trained by their veterinarian to do so, thus reducing the pain of this routine procedure.

### ***Down and disabled livestock:***

Some of the most egregious and galvanizing examples of animal abuse have related to disabled or down animals that have been transported into the sale / slaughter system. Injured animals that would have difficulty with usual transport methods should be handled in accordance with their capabilities. Animals that cannot stand should not be transported.

The AVMA policy on disabled livestock is:<sup>25</sup>

“The AVMA recommends that disabled livestock be handled humanely in all situations.

- **Ambulatory Animals**

If an otherwise healthy animal has been recently injured, and the animal is ambulatory, it should be treated, shipped directly to a state or federally inspected slaughter plant, humanely slaughtered on the farm (where state laws permit) or euthanized. Injured ambulatory animals should not be commingled with other animals during transport. Care should be taken during loading, unloading, and handling of these animals to prevent further injury or stress.

- **Nonambulatory Animals**

*If an animal is down on a farm*

If the animal is not in extreme distress and continues to eat and drink, the producer should contact a veterinarian for assistance and provide food, water, shelter, and appropriate nursing care to keep the animal comfortable. If the animal is in extreme distress and the condition is obviously irreversible, the animal should be euthanized immediately or humanely slaughtered on the farm (where state laws permit).

*If an animal is down at a non-terminal market (e.g. sale yard or auction)*

If the animal is not in extreme distress, but is disabled, treatment measures should be initiated. If the animal is in extreme distress or the condition is obviously irreversible, the animal should be euthanized immediately.

*If an animal is down at a terminal market (e.g., slaughterhouse or packing plant)*

The animal should be euthanized immediately.”

**Closing:**

Veterinarians have always been intimately concerned with animal welfare. Routine, widely accepted, and widely practiced procedures on dairies have implications for animal welfare. As a profession, dairy practitioners should understand the issues involved, be informed of the science available, and be involved in assuring that on-farm procedures address animal welfare concerns in both design and implementation.

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