



UDDER PAIN AND DISCOMFORT AT DRY-OFF IN DAIRY CATTLE (II)

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Dry-off is associated with the engorgement of the mammary gland resulting in udder pain, which is likely to be more pronounced in high-yielding and abruptly-dried cows. There are two main indicators for identifying cows suffering from udder pain. Firstly, the avoidance behaviour of the cow to udder palpation, explained in a previous fact sheet (FAWEC Fact Sheet Number 14). Secondly, cows reduce their lying time as a result of udder pain, probably in an attempt to relieve pressure on the udder. This will be explained in more details in the present fact sheet.

IMPORTANCE OF RESTING BEHAVIOUR IN DAIRY CATTLE

One of the essential components of good welfare is the possibility to express normal behaviour. It is known that lying down is a high-priority behaviour for dairy cows. Cows are prone to lying down, and the motivation for resting increases after a period of deprivation. Having enough time for lying is important, as reduced lying-time can affect both production and welfare in dairy cows. Among other benefits, a cow that is lying down is more likely to ruminate and produce saliva than a standing cow, reducing ruminative acidosis. There are strong correlations between the incidence of foot lesions and lying time. In fact, cows that lie down for shorter periods are more likely to become lame.

Lying behaviour is affected by many factors, including the housing system, stocking density, climate (ambient temperatures and possible heat stress), health status of the animals and social interactions among cows. Uncomfortable conditions (hard floors, wet bedding, and/or small stalls) reduce the time a cow is lying. Lying time responds to simple changes in stall management. For example, dry cows allocated in stalls showed that lying time increased from 9 to 14 hours/day when wet sawdust bedding was switched to dry bedding. In addition, cows spent more time standing (1 hour/day) with their two front hooves in the stall when only wet bedding was available, showing a clear preference for a dry lying surface.

Indicators proposed by Welfare Quality® protocols for dairy cattle can help farmers and veterinarians to detect problems around resting. Irrespective of the housing system used (cubicles or bedded pack), a serious problem in the resting area is detected when the mean time needed to lie down is greater than 6.30 seconds and/or when a high percentage of animals lie partly or completely outside the lying area.

INDICATORS AND TOOLS TO MONITOR RESTING BEHAVIOUR IN DAIRY CATTLE

Several behavioural indicators are used to evaluate cow comfort around resting such as the time spent lying down, the frequency of lying bouts and the duration of individual bouts. Healthy lactating cows typically spend approximately 10-12 hours per day resting, with around 8-10 bouts per day. For healthy dry cows, lying time of 14 hours per day have been described in well-managed and -di-

mentioned housing systems. New methods have been developed for automatically recording these behavioural indicators under experimental or commercial conditions. Continuous automated monitoring over 24h periods of behaviour for applications on commercial farms can help farmers and veterinarians to assess comfort and health. Several commercially available data loggers record lying behaviour in cattle. Loggers that are attached around the neck, body or legs are very accurate, and there are various brands that make them commercially available (i.e. Onset Pendant G, Ice Tags...).

EFFECT OF UDDER PAIN ON RESTING BEHAVIOUR

Disturbances of resting may be associated with insufficient recuperation, frustration, experiencing of discomfort or pain and increased risk for health problems, such as lameness and/or lesions.

A reduction in lying time has been previously used to assess discomfort caused by udder distension due to milk accumulation. For instance, a reduction in milking frequency from twice to once a day in mid-lactation increased mammary pressure and milk leakage and reduced lying behaviour. After omitted milking, all cows showed some signs of discomfort by standing in the resting area afterwards instead of lying. It has been demonstrated that cows reduce their lying time as a result of udder pain, probably in an attempt to relieve pressure on the udder. For example, a significant reduction of 10% in total lying time on the first day has been observed after experimentally induced clinical mastitis in dairy cows. However, the number of lying bouts and the total duration of lying bouts are not usually altered in mastitic cows.

One day after dry-off, when milking is abruptly stopped in cows with average milk production below 10 Kg/day, lying time is not reduced as udder firmness increases minimally. However, cows producing, on average, more than 16 Kg/day reduce lying time, increase the frequency of lying bouts and decrease their duration, which may be indicative of physical discomfort and restlessness. Given that lying is a high-priority behaviour in dairy cattle, it has been demonstrated that the welfare of cows may be compromised after abrupt milk cessation. From Day 2 onwards after dry-off, resting behaviour is altered in the opposite direction: cows increase daily lying time, decrease the frequency of lying bouts and increase the duration of each lying bout. This is likely to be a consequence of the so-called "rebound effect", as it is known that cows are stron-

gly motivated to rest and their motivation to rest increases after a period of deprivation. When cows are unable to rest long enough for a given period of time, they will “catch up” and rest longer than when allowed to do so.

RECOMMENDATIONS ON HUSBANDRY AND PAIN TREATMENT

Despite the evidence showing that drying-off may have a negative effect on animal welfare, there are very few known practical strategies to reduce welfare problems at dry-off.

Dry cows are usually allocated to pastures or dry lot to promote exercise during the dry period. Alternatively, bedded pack and a paved alley should be recommended, including a resting area equivalent to 10 m²/cow and a feeding area big enough for all cows to feed at the same time (minimum of 0.76m of feeder per cow). Bedding material should be removed on a regular basis (preferably daily). In any case, dry cows should be protected from extreme drafts and provided with a dry area to rest as many hours of the day as they desire.

Dry cows should be kept as far away as possible from the milking parlour, as the sight, sound and smell of the parlour will stimulate the milk let-down reflex, resulting in a shorter lie-down periods.

In high-yielding cows, it is recommended to inhibit prolactin production to reduce milk production at dry-off, reduce udder engorgement, udder pressure and hasten mammary involution. For instance, the use of one single intramuscular dose of cabergoline, as a dry-off facilitator, effectively reduces udder pain, as treated cows laid down more than did control cows during the day following dry-off (from 1.5h to more than 2 hours).

“Reduced lying time at dry-off is indicative of udder pain.”

SUMMARY

Lying behaviour is a fundamental requisite for good welfare in dairy cows. Resting behaviour can be automatically measured using data loggers. Reduced lying time, increased frequency of lying bouts and decreased duration of individual bouts may indicate that the animals are suffering from udder pain. The use of a prolactin inhibitor is recommended as a dry-off facilitator to reduce udder engorgement, udder pressure and pain, hasten mammary involution and increase the lying time after the dry-off.

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