



Lameness in dairy cows



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Importance and definition of lameness

Lameness is an abnormal gait resulting from injury, disease or discomfort on one or more hooves and/or limbs, which results in the animal reducing the pressure on the painful foot or limb. Foot disorders are the most common causes of lameness. Lameness that does not originate from the hoof can be due to e.g., trauma, arthritis or muscular ruptures.

In dairy cattle farming, lameness is a major pathological condition. The prevalence of lame cows is up to 30 % worldwide, with more than 70 % of lame cows in some herds. It is the third most common health disorder, after mastitis and reproductive disorders. Lameness causes pain and discomfort and thus compromises the welfare of affected animals.

Lameness cases are commonly classified as infectious (e.g., digital dermatitis, interdigital dermatitis, interdigital phlegmon [also called panaritium or footrot]), non-infectious (e.g., sole ulceration, white line disease, laminitis), or both. In dairy cows, three main lameness cases occur in herds: subacute or chronic laminitis, interdigital dermatitis, and digital dermatitis. Occasionally, a hoof puncture wound can occur and cause a subsolar abscess.

The causes of lameness vary greatly within and between housing systems. For example, in a study in Austria, the prevalence of white line disease was 47% in cubicle systems whereas it was 20% in compost-bedded pack systems.



Legal requirements

Directive 98/58/EC on the protection of animals kept for farming purposes states that ill or injured animals must be cared for without delay.

'Any animal which appears to be ill or injured must be cared for appropriately without delay and, where an animal does not respond to such care, veterinary advice must be obtained as soon as possible. Where necessary sick or injured animals shall be isolated in suitable accommodation [sic] with, where appropriate, dry comfortable bedding.'
(Annex, Paragraph 4.)



Method

The lameness status of a cattle herd can be defined by the prevalence of lameness and the identification of the main lameness types (infectious, non-infectious, or both). The causes of lameness can then be identified and an action plan put in place.

During a farm visit, an inspector should be able to assess the prevalence of lameness using animal-based measures, to gather information about main types of lameness in the herd, and to check that preventive and corrective measures are in place and relevant for the most common type of lameness on the farm.

Assessment, risk factors and action plan

Assessment of lameness

Prevalence of lameness

The prevalence of lameness in a herd can be determined by observing the gait of walking cows (dynamic scoring). Alternatively, lameness can be detected in tethered or otherwise stationary cows by observing their standing posture (static scoring). In large herds, only a representative sample can be assessed (Table 1). Specific attention should be given to multiparous and high yielding cows which are more prone to lameness, especially in the hind feet. Observers need appropriate training to detect lameness and its severity.

Table 1: Number of animals to be assessed depending on the herd size (adapted from Welfare Quality, 2024)

Herd size	Recommended number of animals to assess
≤40	30
41 to 50	33
60	37
70	41
80	44
90	47
100	49
110	52
120	54
130	55
140	57
150	59
...	...

Dynamic and static scoring: See *Indicator factsheet 'Lameness scoring in dairy cows'*.

Lameness types

The lesions are identified during trimming by a professional hoof trimmer. Severely lame cows may be affected by additional lesions that hide the original cause of lameness. The identification of lesions should therefore focus on moderately rather than severely lame cows. The inspector may ask for the lesion report to determine the type(s) of lameness present on the farm (infectious, non-infectious or both).

Identification of risk factors

The risk factors for lameness can be divided into three groups: housing, feeding, and health management. They have different impacts on foot disorders. For example, the infectious component of interdigital, digital dermatitis and panaritium or footrot result from a lack of hygiene (e.g. prolonged standing in slurry), whereas sub-acute or chronic laminitis result from inappropriate feeding. Management factors are, for instance, hoof-trimming practices and readiness of treatment of lame individuals. Risk factors can be detected from observations of the animals:

- Poor cleanliness of the animals especially of their hooves can reveal suboptimal hygiene management;
- Poor body condition, consistency and fibrousness of faeces can reveal suboptimal feeding;
- Difficulties in rising up and lying down movements and lesions on the body can reveal suboptimal housing.

A targeted investigation of risk factors should be carried out according to each type of lesion (Table 2).

Table 2: Risk factors to be assessed according to the type of lameness

Risk factor	Lesion		
	Laminitis	Interdigital dermatitis	Digital dermatitis
Housing			
Reduced lying time ¹	++	++	
Accident when walking ²	+	+	
Solid and slatted flooring	+	+	
Dampness and poor hygiene		++	++
Feeding			
Subacute ruminal acidosis	++		
Energy deficit	++	+	+
Mineral deficiencies	+	+	+
Health management			
No regular lameness checks	++	++	++
Absent or inappropriate preventive lameness measures	+	++	++
Absent or inappropriate lameness treatments	++	++	++

Empty cells are for "no effect" or "information not available"; +...association; ++...strong association

¹Due to a low cubicle-to-animal-ratio, prolonged milking time, long distance to walk between pasture and milking parlour, etc.

²Due to slipperiness of concrete floors, poor maintenance of cow tracks between pasture and milking parlour (e.g. presence of stones), cows moved too quickly on tracks, etc.

Checking preventive measures

As lameness is common on dairy cattle, it is essential that the health plan of the farm addresses it. Typical measures include:

- Routine monitoring of locomotion by trained caretakers: regular dynamic scoring of cows and if not possible, static scoring. Special attention should be given to transition periods (calving, beginning of lactation, housing/pasture transition) and to high yielding cows.
- Regular hoof trimming by a professional hoof trimmer or veterinary practitioner to prevent overgrown claws: at least once a year, up to 2 times a year and more if necessary (non-response to treatment, for instance).
- Corrective measures specific to the risk factors identified. Regarding housing, measures can include regular cleaning of the floor and provision of bedding, maintenance of flooring, walkways and exercise areas, reduction of damp areas (e.g. around water troughs), design of cubicles (cubicle length, kerb height etc). Regarding feeding, measures can concern the management of transition periods, and mineral supplementation. Regarding health management, measures should specify the frequency of lameness checks and hoof trimming. More information can be found in CARE4DAIRY factsheet on cow locomotion.
- Treatment of animals affected by severe lameness as soon as it has been detected.

Legal requirements

Council directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes

'Any animal which appears to be ill or injured must be cared for appropriately without delay and, where an animal does not respond to such care, veterinary advice must be obtained as soon as possible. Where necessary sick or injured animals shall be isolated in suitable accommodation [sic] with, where appropriate, dry comfortable bedding.'

(Annex, Paragraph 4.)

Council Regulation (EC) No 1/2005 Annex 1 – Technical rules

'Animals that are injured or that present physiological weaknesses or pathological processes shall not be considered fit for transport and in particular if:

(a) they are unable to move independently without pain or to walk unassisted; [...]

However, sick or injured animals may be considered fit for transport if they are:

(a) slightly injured or ill and transport would not cause additional suffering; in cases of doubt, veterinary advice shall be sought;

(Annex1, Chapter 1, Paragraphs 2 & 3)



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