

Lameness: What is new?

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Lameness is an important disorder affecting dairy cows in the United States. A recent survey of 30 Wisconsin dairy herds determined the average winter prevalence of lameness to be 19.7% in tie-stall herds and 27.8% in free-stall herds (Cook, 2003). Heel warts were the most common lesion found in a subset of 10 herds, accounting for 56.8% of all treatments, followed by sole ulcer (18.4%), white line disease (10.4%), and sole hemorrhage (6.4%). Lameness treatment rate was higher at the end of the winter and in September. Stall base type had an effect on lameness prevalence. In sand-bedded free-stalls the mean lameness prevalence was 19.8% whereas in non-sand free stalls the mean prevalence was 30.3%. In sand-bedded tie-stalls the average prevalence was 12.2% and in non-sand tie stalls the mean prevalence was 21.9%.

Preliminary results of an on-going study involving 50 free-stall herds in Minnesota indicate average lameness prevalence in the high group was 23.9%, with 18.8% for sand herds and 26.5% for mattress herds.

A recent study published in the Journal of Dairy Science (Cook et al., 2004) looked at the effect of free-stall surface on daily activity patterns of lame and non-lame cows. Ten cows from each of 6 sand and 6 mattress herds were selected for the study. Using video photography, researchers recorded cows' location (stall, alley, milking parlor), activity (standing up, lying down, feeding, drinking) and how many minutes a day cows spent doing each activity. Key summary points of this study:

- Average herd lameness prevalence determined by locomotion scoring all milking cows in each herd was higher in mattress herds (24%) than in sand herds (11%).
- Lame and non-lame cows in sand herds behaved similarly.
- Non-lame cows in mattress herds behaved similarly to cows in sand herds.
- Slightly lame cows in mattress herds spent 2.32 more hours per day standing up in the stall than cows in sand herds; for moderately lame cows the difference was 4.31 hr/day.
- Moderately lame cows in mattress herds had fewer number of stall use sessions at 4.62 per day compared with moderately lame cows in sand herds at 8.50 per day.
- Lying time for moderately lame cows in mattress herds was reduced to 10 hours a day compared to approximately 12 hours per day for all other cows.
- Greater standing time in the stall for lame cows may be detrimental to claw health and increase the duration of lameness.

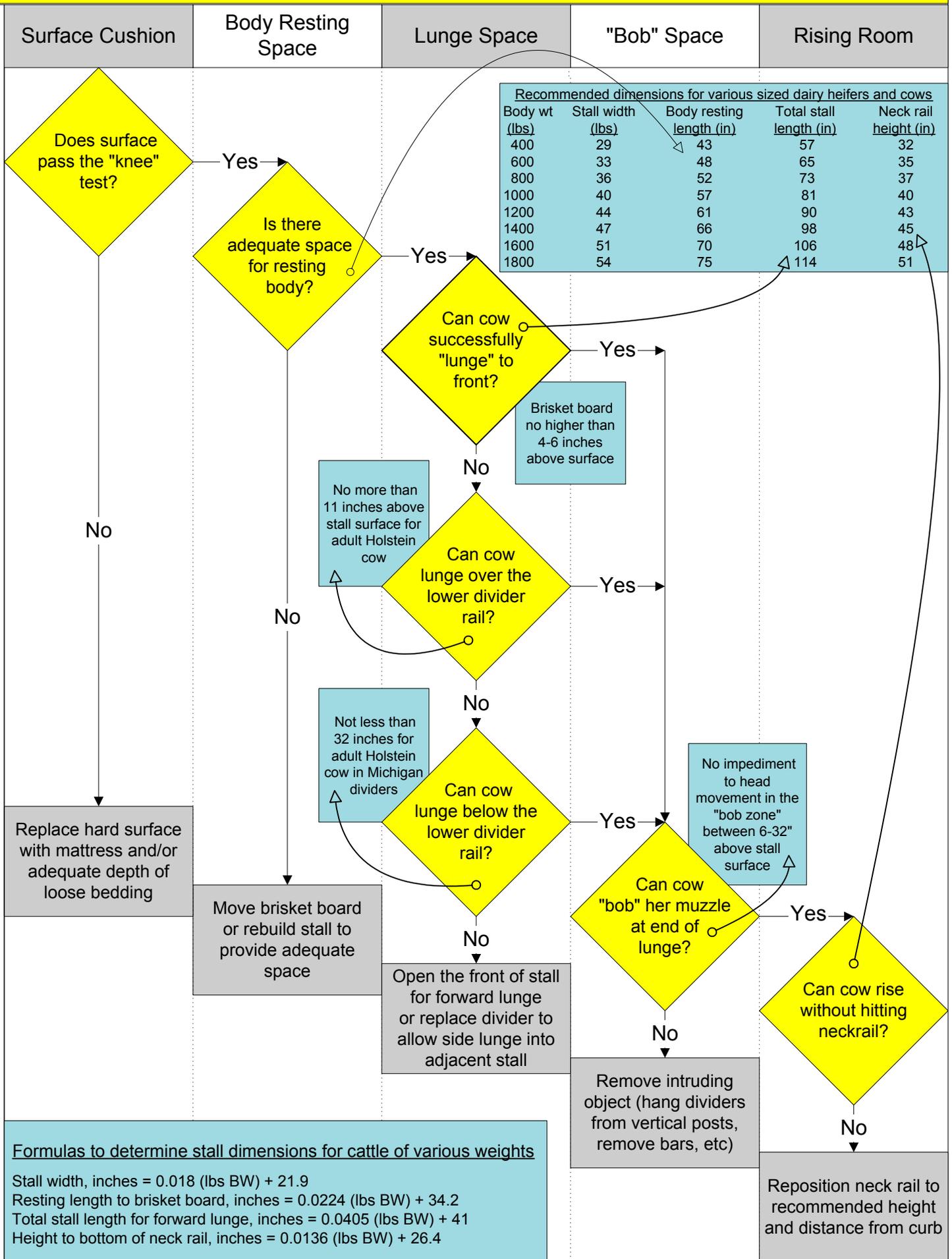
Some recommendations to reduce the prevalence of lameness (especially in mattress herds):

- Building or redesigning stalls to meet cows' needs – which means that cows can rise and lie down normally.
- Reducing risk factors for lameness.
- Moving lame cows to a dedicated bedded pack where they can recover.

Nordlund and Cook (2003) developed a free-stall evaluation flowchart (see back side). It takes into account surface cushion, adequate resting area, room to lunge and bob, room to rise below and behind the neck rail, and curb height. It is important that cows have comfortable stalls to lie down, so lameness prevalence can be reduced.

Flowchart for Evaluating Freestalls

Drs. Ken Nordlund and Nigel Cook, School of Veterinary Medicine, University of Wisconsin-Madison, 2001



Recommended dimensions for various sized dairy heifers and cows				
Body wt (lbs)	Stall width (lbs)	Body resting length (in)	Total stall length (in)	Neck rail height (in)
400	29	43	57	32
600	33	48	65	35
800	36	52	73	37
1000	40	57	81	40
1200	44	61	90	43
1400	47	66	98	45
1600	51	70	106	48
1800	54	75	114	51

Formulas to determine stall dimensions for cattle of various weights

- Stall width, inches = $0.018 (\text{lbs BW}) + 21.9$
- Resting length to brisket board, inches = $0.0224 (\text{lbs BW}) + 34.2$
- Total stall length for forward lunge, inches = $0.0405 (\text{lbs BW}) + 41$
- Height to bottom of neck rail, inches = $0.0136 (\text{lbs BW}) + 26.4$