

Lying Behavior in Calves

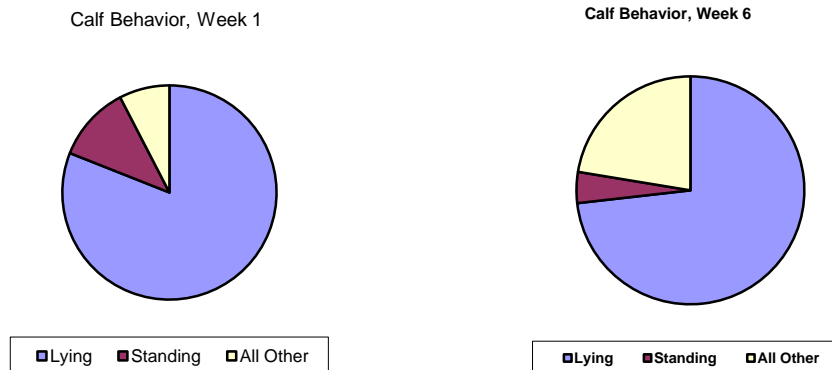
True or False: Calves lie down a lot? Well, anyone that has experience with calves has to answer this question as true. But, what are the actual numbers? Fifty percent of the time? Ninety percent of the time lying down?

The best estimates that I can find are from four research projects where calf behavior was measured. (Hill and Others, 2013, Camiloti and Others, 2012, Panivivat & others, 2004, and Chua & others, 2002). Hill and Others used data loggers to collect calf position every five minutes for days four to fifty-six of age. Camiloti and Others used video recordings over two days to monitor calf lying behavior at two weeks of age. Panivivat and Others observed calves one day each week while Chua and Others only observed behavior on weeks 2 and 6.

Calf Behavior

The dominant behavior for calves six weeks or less in age is lying down. Chua reported about 71 percent of the time was spent lying down while Hill observed 79 percent lying time.

Panivivat observed that the percent of time lying was related to age (See figures below). Lying means the body is in contact with the bedding. Standing means the calf only standing, not engaged in any activity. All other means eating, self-grooming, licking side of pen, eating bedding, or moving or jumping around in the pen.



Note how lying down dropped from 81 percent of the time at week one to 73 percent by week six. Still, even at six weeks calves were lying down nearly $\frac{3}{4}$ of the time.

With intensive lying time measurement Hill estimated that lying time decreased with age with twenty-six minutes more standing at six weeks compared to one week.

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Hill expected that lying time would vary by season of the year (his barn is located in Ohio with significantly cold weather in the winter). The reasoning was that calves would lie down more in cold weather (low of 0F or -18C) to conserve body heat and lie down less during hot weather (high of 100F or 38C) in order to dissipate body heat. Not true for at least these calves – same lying times regardless of season of the year.

However, lying time is conditioned by how comfortable calves are when lying down. They go out of their way to avoid lying on bare concrete. Wet bedding is also avoided (Camiloti, 2012) especially as the dry matter of the bedding drops under sixty percent. As common sense would suggest, calves like to lie down on soft dry surfaces.

Implications for Transporting Calves

If calves are in a truck or trailer for any significant length of time our data suggest that they are going to lie down. Given this, have we made sufficient provision for bedding in the vehicle? We want the calves to remain dry. Therefore we need enough absorbent bedding to soak up urine and loose feces.

In many parts of the country and for the majority of the year, one job of bedding is to insulate the calf from the cold vehicle decking. Remember that if there is space the calf is probably going to be lying down for most of the trip. Adding just enough sawdust, shavings, shredded paper or straw to cover the decking will do little to prevent body heat loss.

One easy way to know when extra bedding needs to be added is to check what you are wearing. If you need a sweatshirt, insulated shirt or vest to keep warm then enough bedding should be added to insulate the calves from cold decking.

Implications for Calf Pens/Hutches

Try this test. First thing in the morning sit for five minutes on a concrete step that is in the shade. The test is best done while not wearing insulated coveralls or similar clothing. Get your butt right down on that cold concrete. See how long it takes to get really cold.

Now, remember newborn calves will be spending upwards of 19 hours a day lying down. Is there enough clean and dry bedding to provide an insulation barrier? Why do I emphasize clean and dry? The rate of heat loss goes up dramatically depending on the moisture level in the bedding. The rate of heat transfer may be from three to ten times that of dry bedding.

When you are where the calves are housed test the bedding with the “knee-drop” method. Get into a pen/hutch. Kneel where you can see the calf has been lying down. Stay there for at least a full minute. If your knees get warmer, you are okay. If your knees get colder,

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imagine the heat loss from the calf's body down into the concrete/cold ground. Also, as you stand up check to see if your knees are still dry (they should be!).

References: T. M. Hill, H.G. Bateman, J.M. Aldrich, J.D. Quigley and R.L. Schlotterbeck, "Intensive measurements of standing time of dairy calves housed in individual pens within a naturally ventilated, unheated nursery over different periods of the year." *Journal of Dairy Science* 96:1811-1814 (2013). T. V. Camiloti, J.A. Fregonesi, M.A.G. von Keyerlingk, and D. M. Weary "Effects of bedding quality on the lying behavior of calves." *Journal of Dairy Science* 3380-3383 (2012). R. Panivivat, E.B. Kegley, J.A. Pennington, D.W. Kellogg and S.L Krumpelman "Growth performance and health of dairy calves bedded with different types of materials." *Journal of Dairy Science* 87:37326-3745. (2004) B. Chua, E. Coenen, J. van Delen and D.M. Weary "Effects of pair versus individual housing on the behavior and performance of dairy calves." *Journal of Dairy Science* 85:360-364.(2002)