The Case for Preconditioning:
A step towards a more integrated, responsible beef industry

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As time goes by, one can be forgiven for feeling like the beef industry is under siege. Attacks come from many directions, and things like trade agreements and overseas market access are, for the most part, out of our hands. Many other issues though, such as losses due to disease and associated decreased feed efficiency, responsible use of antibiotics in food production, welfare of animals in the agricultural sector, and fluctuating prices for our product, have steps towards solutions which can and should begin on our own farms.

Coming from a predominantly cow-calf area, my focus is often on calves from birth up to and through weaning. The next phase of a beef animal's life, feeding, is where a lot of the attention surrounding these problems focuses, but their roots trace back long before the calves arrive in the feedlot.

Pneumonia is one of the major preventable diseases seen in feedlots as well as in all the other stages of beef production. According to a national US study in 2011, pneumonia (aka Bovine Respiratory Disease, or BRD) affects one in five beef animals in feedlots, and is responsible for approximately half of all deaths in feedlots. Treatment costs alone were estimated at $54 million dollars in the US in 2011, and that figure does not include the losses due to death, decreased feed efficiency, and decreased carcass weight and marbling scores. From a strictly economic perspective, the impact of pneumonia on the beef industry is nothing short of enormous.

Economics aside, there are many other reasons why the impact of pneumonia is so staggering. From a welfare perspective, the number of sick, chronically affected, and dead animals as a result of pneumonia is an easy target for those critics of the beef industry who wish to find fault with the feeding of beef animals. In terms of the environmental impacts of feeding beef animals, the inefficiencies and losses due to pneumonia translate into the need for more head of cattle to fill demand, which in turn means more land base required to house cattle and raise feed, more fossil fuel use growing, harvesting, and delivering feed, more water consumption, more methane emissions, etc. And lastly, in this era of fear over the emergence of antibiotic resistant bacteria, pneumonia is the largest reason for antibiotic use in the beef cattle industry. Farmers and veterinarians are good at treating cases of pneumonia and dealing with outbreaks, but as pressure increases for less antibiotic use in agriculture, one of the best things we can do is to find a way to decrease pneumonia rates before antibiotics are even needed.

You've heard all the above before, I'm sure, and I bet you also heard about one of the major solutions. Preconditioning is an idea that emerged in the late '60s, with the express goal of decreasing the risk of pneumonia in feedlots. The majority of pneumonia occurs in the first 30 days in the feedlot, and it is no coincidence that it is also the highest period of stress in most calves' lives. The mark of a truly good preconditioning program is not which brand of vaccine you injected into your calves, but how effective the program is in reducing stress, and thus preserving a healthy immune system when that calf gets off the truck.

Let's try to make a list of things which might stress a calf. First should obviously be separation from the dam, which everyone with ears knows is not enjoyable to a calf. No

longer having access to milk is a closely related cause of stress, as is having to get accustomed to new and unfamiliar feeds. Going from a pasture to a yard, and learning where the bunk is and that it is now the source of nourishment is another big stress, and the same can be said for learning where to get water. Being handled by humans is always a big stress in and of itself, and if those humans are pushing the calf through a loud, unfamiliar series of gates and chutes, poking it with needles, cutting off its horns and testicles, poking a tag into its ear, and all the other wonderful things we do to calves in the fall, is stress a surprise? Now let's say we do all that over the course of a day or two, throw it on a truck, mix it with a bunch of strange calves in a strange new environment, and then that night the temperature drops 15 degrees and it gets rained on. One in five calves with pneumonia would probably be optimistic in those circumstances, but unfortunately that is not an uncommon scenario.

Preconditioning should aim to go through that list, and strive to lower stress at each and every step. The biggest bang for your buck in a preconditioning program is ensuring that the calf is weaned for at least 4 weeks before leaving the farm; this alone has been proven to have a significant beneficial effect on the health of calves entering a feedlot. Fenceline weaning or other gradual weaning techniques (such as nose flaps) will also be beneficial, as they further spread out the stress associated with weaning, as the stress from milk deprivation occurs and the calf has time to get over it before the stress of separation from the dam completely occurs. Creep feeding should be started even sooner, as getting calves accustomed to eating a concentrate from a bunk will significantly ease the transition to bunk feeding after weaning. If the creep feeding setup could possibly be in the yard the calves will be moved to after weaning, then that is one more way that the move after weaning will be less unfamiliar.

"Processing calves" is what most people think about when discussing preconditioning, and it is true that all these tasks are an important part of the process. An animal that is vaccinated, dewormed, castrated, and dehorned is indisputably a more valuable animal, but how you do it is just as important. As with weaning, anything we can do to spread the stresses over different time periods, preferably before weaning, will help lower the risk of disease. Castrating and dehorning can be done at any age, with the earlier the better (think of dehorning paste and elastrator bands) as far as weaning stress goes. If your handling system is not something to inspire too much stress in and of itself, running the calves through for a killed vaccine and returning them to pasture with the dams can be done twice, 3-4 weeks apart, prior to weaning along with deworming and a blackleg vaccine, or whatever else your vet recommends as part of the processing procedure (live vaccines may provide better protection, but are less flexible; your vet can help decide what will work best on your operation). Keeping that handling system working smoothly, so that it operates quietly and the cattle move through in an efficient flow without relying on a lot of chasing and yelling, is also really important for minimizing stress.

Lastly, we cannot control what the weather is going to throw at us, but just as we do not cut hay when rain dominates the forecast, so too we should do our best to plan weaning to coincide with a few days of fair weather. Providing well-ventilated shelter and dry bedding can also go a long way to ameliorating the effects of bad weather, as can an appropriately timed dewormer prior to weaning, to help ensure calves are in good condition and free of mange and lice.

I know you all take pride in your calves, and preconditioning is a great way to foster that sense that what you are providing is truly a premium product. Adding value to your calves, and providing the first steps needed for a healthier, more efficient and sustainable beef industry, is something we can all take pride in.