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Calf Note #212 – Walking the Farm, Part 2 – Calving Area

Introduction

Walking the farm is a great experience. It's an opportunity to help the farm improve their operation and bring about better, more profitable management. And, it may help keep calves more comfortable and healthier. That's a good thing.

One of the most important areas to evaluate when it comes to calves is the calving area. So much of their future health and growth can be affected by what happens during the critical few hours they're in that area of the farm. I like to go to the maternity area first and spend more time at this area than most people expect. I have several critical concepts / ideas that I try to impart to the farm when I visit. I try to leave a few "Q-Tips" with the farm.

"Q-Tips"

When walking the farm, we don't have the luxury of conference rooms, air conditioning, and PowerPoint presentations. So, when we discuss an opportunity for improvement, it's important to distill the important biological concept into a short "rule" or "tip" that can be easily remembered. And implemented. It's critical that each "tip" be based on sound and reasoned science that can be justified and explained with data. I like to think of these as "*Quigley's tips for good calf and heifer management*", but that's a mouthful. So, let's call them "Q-Tips". I like to use these Q-Tips as anchors for explaining the reasons behind every recommendation made during a farm walk. Let's look at a few Q-Tips related specifically to the calving area.

Q-Tip #1: First meal… Last meal?

What is consumed by the calf first will generally dictate whether it will live (colostrum) or die (manure). This is a simplification of a more complex concept, but it tries to make the point that sanitation is essential and the calving area – more than any other single area on the farm – must be spotless. I'm encouraged that more and more farms that I visit are implementing protocols to make the calving area the cleanest area of the farm.

Remember, the immune system of the calf is most vulnerable between the time it is born and the time it consumes its first meal of colostrum. Cleanliness is necessary so that the calf's first meal does not become its last meal. Back in 1997, I wrote Calf Note #11 which alludes to an important study that documents very nicely the importance of early colostrum feeding and the risk of leaving the calf in a dirty environment. Briefly, if calves consumed colostrum prior to an experimental infection with E. coli bacteria, they remained healthy; calves that were infected with E. coli and *then* fed colostrum were much more likely to get sick and die. In large part, what determines health is likely due to what gets their first – colostrum or contaminated bedding, manure, etc.

I will share some examples of what I consider excellent calving area management, with a focus on cleanliness. One example, from a large dairy in China, was demonstrated what could be done when farm managers consider sanitation to be a top priority.

Q-Tip #2: Many mommas, many problems

Figure 1. Photo of a cow and triplet calves born on a pasture at the University of Tennessee. The fourth calf in the background is from another cow.

I prefer single calving areas to those maternity pens that contain lots of cows. It's my experience that single pens are easier and more likely to be cleaned between cows. Large calving areas with multiple cows are often more highly contaminated with feces and cleaned less often. Further, once a calf is born, we usually see 3 or 4 or 5 cows investigating the newborn calf – each of them potentially contaminating the calf. Cows should be able to go through the birthing process without interference or interruption from other cows that want to "nose in" on the action (literally!). Typically, when cows give birth outside, they will find a quiet place where they can be alone, so this may be more normal behavior. "Back in the day", dry cows were often left on pasture to calve. The cow typically left the group and gave birth in a quiet area where she wouldn't be disturbed. Figure 1 is a photo of a cow housed on pasture at the University of Tennessee dairy farm. She gave birth – to triplets! – on a well drained pasture.

I have visited some farms that move a cow into a clean, freshly bedded pen as she shows active signs of labor. There, she is given water and (sometimes) some fresh forage. She can give birth under the watchful eye of the maternity staff. The calf is removed shortly after birth and the cow has a chance to rest without interference from other cows. She is removed and the pen immediately cleaned, disinfected, and re-bedded to prepare for another cows. It's a great system and one that I highly recommend.

Figure 2 shows the calving area for a large dairy in China. This 5,000-cow dairy has a dedicated maternity area and staff to monitor cows and care for the calves. Dry cows are moved to the maternity area from the dry cow pens about 14 days prior to calving. They are placed into small groups where they can be monitored by the maternity staff. Cows showing signs of parturition are moved into an individual pen where they have clean bedding, clean water and can give birth without interference from other cows. The area is cleaned and disinfected after each cow. Soiled bedding is removed after each cow and the straw base is cleaned daily.

Figure 2. Example of a clean calving area on a farm in China.

A caveat to the above. Recent research suggests that the microbial flora in the calf's gastrointestinal tract is established very early in life – even during parturition – and this flora

may be important to establishing a sound immune system later in life. Some data suggest that leaving the calf with the cow may be beneficial in establishing this beneficial microbial flora.

Figure 3. Colostrum collection immediately after calving.

Further, there is societal pressure to leave the cow and calf, with the idea that separation is psychologically traumatic for both calf and cow and may have long term effects on the calf's behavior later in life. I have made the argument previously (e.g., Calf Note #149) that isolation of calves (perhaps the term "social distance" provides some context), particularly during the neonatal period of their immune systems are most sensitive and a significant portion of calves may be immune compromised is valuable to reduce morbidity and mortality.

Of course, we need to be sensitive to the wishes of our customers, for sure. However, in my opinion, the need to minimize the risk of infection with potential pathogens outweighs the potential benefits of leaving calf with cow for more than an hour or so. And the research data regarding nursing clearly suggests that calves need to be fed colostrum, rather than to allowed to nurse the dam naturally (see Calf Note #01).

Q-Tip #3: Momma doesn't always know best

As far as providing enough colostrum to the calf – early enough – we simply can't leave it up to the calf and cow. Many research trials have shown that calves (especially Holstein) left to nurse the dam will consume less colostrum and begin consuming that colostrum later than if they are fed by hand.

Figure 4. Managing colostrum requires clean collection and freezing of extra.

So, it is up to us to collect the colostrum and determine if it is of sufficient quality to feed to the calf. On the Chinese dairy, the managers installed a portable milking unit and the cow is moved to the unit within a couple of hours of calving (Figure 3). The entire area was spotless and was cleaned and disinfected after each cow.

Collecting colostrum should be done cleanly and rapidly. There are many different approaches to colostrum collection. In some cases, colostrum is collected using equipment dedicated to colostrum. In Figure 3, we see an excellent example of a system to collect colostrum shortly after collection. This maximizes the colostrum IgG concentration and provides and opportunity to feed the calf shortly after birth, when IgG absorption efficiency is highest. Other farms milk fresh cows once per day in the milking parlor. This means that some colostrum may be collected >20 hours after

calving. This effectively reduces the quality of the colostrum produced on the farm, since colostrum quality (IgG concentration) declines with time after calving.

Once the colostrum is collected, it should be tested with a BRIX refractometer and either fed immediately or frozen. The Chinese dairy used the Colo Quick system (Figure 4) to manage their colostrum. Each container has a record of the date and BRIX value.

Figure 5. A stainless steel "taxi" transports calves from the calving area.

Q-Tip #4: Keep a clean ride!

Moving the calf away from the cow and calving area into a clean, dry pen where it can be safely managed is an important next step to ensuring a healthy start to the calf. Transporting calves from the calving area to the transition area is usually done with a wheelbarrow (AKA "taxi"). In this dairy, the managers invested in a stainless-steel taxi that can be disinfected between calves (Figure 5). This is much more sanitary than the typical plastic units I see on other farms. A dirty taxi is often a weak link of dairies. Indeed, using large cattle trailers is another weak link that I see on farm with some frequency.

Q-Tip #5: Baby, it's cold outside!

Newborn calves are suddenly responsible for maintaining their own internal temperature after birth. They are wet and with little insulation. It's easy for them to get chilled. Although there are few well-researched lower temperature research trials that document when to begin using heat lamps. Therefore, I use the rule of thumb to use heat lamps from 20°C and below. Note Figure 6, our Chinese dairy, had individual boxes for each calf with a heat lamp available for each animal. There is plenty of straw to allow the calf to form a "nest" and maintain its body heat. All in all, a very nice system. In this dairy, calves are moved from the maternity area once daily, and there were enough individual boxes for a calf to remain in this warm, dry environment up to 24 hours.

Figure 6. Individual calf pens with heat lamps and plenty of clean straw.

Jim's Q-Tip #4: Pulled calf = problem calf

The scientific literature is quite clear and consistent that, when a calf needs to be pulled from the cow during birth, there are several potential negative consequences, depending on the severity of the intervention. Even minor assistance has been associated with delayed time to stand, anoxia (lack of oxygen), acidosis, and potentially, reduced absorption of IgG from colostrum. Of course, when a calf requires intervention, we must help. However, it's important to understand the ramifications of this intervention and keep this information as part of the calf's permanent record.

Keeping records of the birth event – and USING these records is the final step in best management of the calving area, as demonstrated in Figure 7. I see many farms that collect information on birth management – dates, times, who was responsible for caring for the calf, etc. However, fewer farms produce actionable information from this raw data. These data are a treasure of information on how to improve their overall management. A weekly or bi-monthly summary of births, stillbirths, average calving score, time to feed the calf, and then correlate these data with preweaning mortality (and growth) could be very useful on the farm.

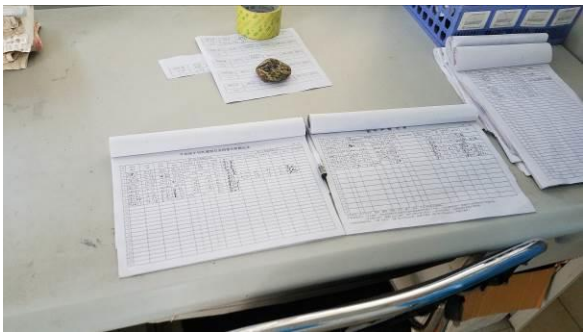

Figure 7. Record keeping -- for cow AND calf - is an important part of calving area management.

Written by Dr. Jim Quigley (28 March 2020)
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