

Calving Management

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Keys to successful calving management:

1. Preparing for success at 1st calving through appropriate genetic and physical selection of replacement heifers.
2. Using bulls with appropriate genetic traits for your cowherd and management.
3. Knowing accurate breeding and calving dates.
4. Providing appropriate nutrition throughout gestation.
5. Being prepared to intervene when necessary.

Before any discussion of assistance at calving is had, I feel it is important to define preventative measures. As Franklin is credited to have said: “an ounce of prevention is worth a pound of cure.” This adage certainly holds true when it comes to birthing problems in cattle - 50% of calves that experience a hard delivery will not survive to weaning. Therefore, it is imperative that we do our best to set cows up for successful calvings through appropriate selection and good management.

One criteria that has been shown to be highly influential on calving success is genetic selection for calving ability. Calving ability is a general term that encompasses traits such as moderate birth weights, maternal drive, shorter gestation lengths, and bonding strength. In a study published out of Nebraska’s Meat Animal Research Center, a “select” line of cows was developed with the aim of reducing 2 year old dystocia (birthing problems) rates. Select cows were pressured on calving ease, birth weight, weaning weight, and yearling weight. These animals were then compared head-to-head with a group that were only selected to maintain birth weights and yearling weights in line with select cows. Over the 7 year study, approximately 7000 select cows and 2000 control cows were evaluated. Genetic selection in “select” group resulted in approximately 7 pound lighter birthweights, 2 day shorter pregnancies, a 20% decrease in 1st calving assistance, and a 5% lower lifetime calving assistance rate. This was accomplished while simultaneously increasing pre-weaning ADG by 1.6% and not affecting weaning weight or yearling weights significantly. These data suggest that selecting males and females based on production history (incidence of dystocia as a 2 year old) and EPDs for birth weight and maternal ability can dramatically influence the dystocia rate one has on their own farm or ranch.

In other studies looking at heifer dystocia, the largest predictor of whether a cow will experience trouble at calving is birth weight of calf. Selecting bulls with appropriate calving ease and birth weights is paramount for decreasing assistance rates. Simply picking the bull with the highest CE and lowest BW is not the silver bullet, however. A producer must also time heifer exposure to bulls critically, ensuring that heifers have reached an appropriate percentage of mature body weight and will continue to grow at an acceptable rate throughout their 9 month pregnancies to be able to deliver an average sized calf. In general, a heifer should not be exposed to a bull until she is 60-65% of her mature bodyweight, and then should continue growing at about 1-1.5lb/day after pregnancy establishment. This should have her calve out around 85% of mature bodyweight. Moderate growth rates such as these are achievable, but the producer should

pay particular attention to heifers during stressful times of year such as deep winter or midsummer in the fescue belt when growth rates may drop to zero or worse for 30 or more days. In my practice, I have found that farms may put heavy selection pressure on high calving ease and low birthweights, but treat their replacement heifers like cows. These same farms tend to have increased rates of heifer dystocia. It is my belief that without appropriate heifer growth management, these same genetic traits intended to decrease dystocia can turn on us, creating a situation where we are selecting smaller females that may not grow without special attention, highlighting the importance of balanced genetic selection. Work with your herd health veterinarian and seedstock producers to ensure balanced trait selection when purchasing new bulls and heifers.

Heifer breeding soundness exams are also important management tools for the cow-calf producer. Less than 2% of operations managing beef cows in the 2007 NAHMS study reported performing these exams on replacement heifers, and the same dataset reported a 15% or greater heifer dystocia rate nationally. In herds I work with that perform breeding soundness exams on yearling heifers, in conjunction with other prevention measures I have described, we routinely achieve heifer dystocia rates of less than 5%. A heifer breeding soundness exam is a relatively quick and inexpensive insurance policy that a producer takes out on any female they have promoted to replacement status. In my practice, a heifer BSE involves measuring the dimensions of the pelvic canal, body weight and body condition analysis, a reproductive tract score, conformational review, and review of their dam's production records (if available). We aren't guaranteeing that the heifer passing her exam will be able to breed, calve, and produce without any problems, but we definitely remove any outlier heifers that run a high risk of not being productive members of a herd through this screening test. In a 2002 study looking at the outcomes of 700 heifer BSEs, 68% of 2 year old calvings were correctly predicted at the time of yearling BSE. Breaking that down further, 86% of "no assistance" calvings were correctly predicted while 51% of "assistance" calvings were correctly predicted. It is not a perfect test; however, I like knowing with 86% confidence that my heifer will likely not need assistance at her first calving given the investment of \$5-10 up front.

Diagnosing pregnancy and gestational age is also very important for preventing losses from dystocia on the farm or ranch. Developing a defined breeding and calving season is a good place to start, but simply knowing "bull in" and "bull out" dates isn't enough in my book. Your herd veterinarian should be able to accurately stage a pregnancy through rectal palpation to within 2 weeks of actual calving date. This can be even more accurate with known breeding dates and rectal ultrasound if performed before 90 days of pregnancy. This data allows the producer to manage groups of pregnant cows and heifers far more attentively for shorter periods of time. Heavy bred cows should be checked daily, if not multiple times a day when they reach their 2 week window to ensure timely response rates if there is a problem.

I have hopefully laid the groundwork for encouraging better prevention practices up front. I strongly encourage all participants to identify and develop a professional relationship with a large animal practitioner in your area. The knowledge and service that a veterinarian can provide to your operation is hard to fully quantify, but is well worth the investment when developing prevention practices for your unique operation. Remember that prevention protocols and practices aren't 100% effective. There will come time that

you need professional help, and it is better to have an established veterinary-client-patient relationship at that time than to try develop one in the event of an emergency. Here are some tips for starting the VCPR with a local vet:

1. Make contact with vet's office and describe your management goals.
2. Listen to the goals of the veterinarian you would like to establish relationship with.
3. Invite veterinarian to visit your operation and learn your management practices.
4. Involve veterinarian in management decisions, i.e. seek advice on vaccine protocols, deworming protocols, pregnancy diagnosis, culling strategies, etc.
5. Integrate with a network of producers working with same veterinarian to increase service efficiency for both vet and producers.

Regardless of prevention strategies and relationship with practicing veterinarians, there will come times when emergency situations arise that require immediate assistance. Given the geographic practice spread of most large animal practices today, there might be significant lag times between vet contact and vet assistance for the cow experiencing dystocia. Knowing when and how to intervene with the calving cow can certainly improve outcomes in these types of situations.

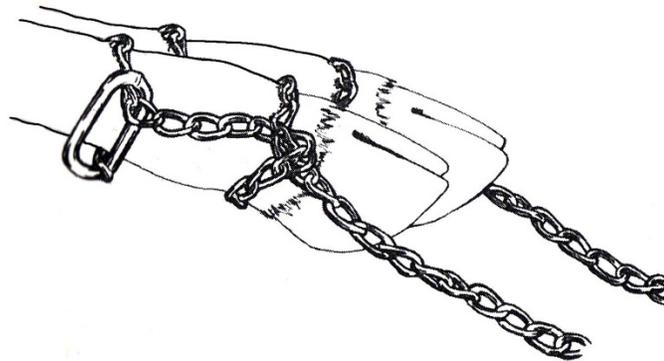
There are 3 stages of labor. The first stage is the longest - lasting anywhere from 2-10 hours, and it involves active hormonal signaling between the cow and her fetus preparing both parties for delivery. It is during this time that the calf is positioning itself into the birth canal and the uterus is actively contracting to push the calf out. Cervical ripening has been taking place over several days, but active cervical dilation occurs primarily during this time. Stage 1 labor is characterized by a cow who is subtly uncomfortable, maybe staying back from the herd, not actively grazing or chewing cud, and repeatedly getting up and down or walking. The tail may be held out or slightly up and there is visible mucous coming from the vulva. Stage 2 labor is what we think of as "active labor," or the more noticeable stage of labor. Stage 2 labor is characterized by visible fetal components protruding from the vagina and a cow that is pushing hard to get the calf out. Stage 2 starts when the water sack breaks, and this is the time the clock starts ticking. Active pushing should be over in less than an hour. When a producer calls me and says that they see feet but have not examined the cow, I recommend they wait 10-15 minutes and then get cow to chute for vaginal exam. Once feet are noticed, we want to move quickly to ensure calf can get out alive. Oftentimes, we don't exactly know when the water sac broke. If the cow is not making progress every 10 minutes, i.e. you don't see more calf on the second check than you saw on the first check, chances are it's stuck and needs some help.

The expected delivery position for calves is the "diving posture." The calf should be coming front end first, with the front legs extended out in front of the body and its head tucked between the front legs. Therefore, you should first see two sets of hooves, followed by the knees (carpi), and then the nose. Any deviation from this would be considered abnormal and should be attended to more closely. Calves can be born without assistance backwards (back feet first), but they tend to have more trouble. If any variation of leg or head retention is felt on vaginal exam, before any pulling is done, the calf's presentation should be corrected to as close to "normal" as possible. Obviously, it is not

possible to turn the backwards calf around. Just pulling on what is hanging out is often a bad idea, and can turn a bad situation into one far worse.

Before any obstetrical work is to be done, please remember to clean up the backend of the cow and your arms. By the time the calf is out safely, the procedure will likely get dirty and messy, but we should do our best not to introduce bacteria into an already sick environment. Simply rinsing the cow's vulva, perineum, and your arms with clean water and mild dish soap can greatly reduce the transfer of manure and its associated bacteria into the uterus of the cow. Using disposable plastic sleeves and sterile lube is also highly encouraged. If Caesarian section is a possibility for your animals, do not use the powder lube (J-Lube ®) as this will greatly diminish the prognosis for the cow surviving post-surgically. Additionally, trying to keep your interventions as clean as possible can improve surgical outcomes if C-section is elected later.

It is important for producers to realize what an appropriate level of assistance is. I have a lot of pictures and stories from practice where I have showed up to a calving after a lot of intervention has already been tried. I could curl your toes with horrific tales of gore and guts from correction strategies gone bad. Suffice it to say that farmers and ranchers are creative and well-intentioned, but at times a little too stubborn and determined. Appropriate placement of clean obstetrical chains or nylon ropes are detailed in the picture below. Note the placement of wraps above and below the first joint on the calf's leg. This is important for reducing the risk of breaking the leg bones while pulling. A chain or rope should be placed on at least two legs. Pulling on one leg alone is usually not going to help the calf be delivered.



Before any pulling is done, ensure that the pelvis is big enough for the calf to pass through. The most common causes of dystocia are malposition of the calf's legs or head, or fetal-maternal size mismatch (in other words, pelvis is too small to pass a normal calf or calf is too big to pass through a normal pelvis). A quick "guide" is to spread your hand out inside the pelvis and then compare how wide you could spread your hand against the head or chest of the calf. If the two don't match up, it's definitely time to stop and wait for the vet to arrive. If you feel that the size of the pelvis and the size of the calf are reasonably comparable, it's time to start pulling. No more force should be exerted on the calf than what can be generated by two strong men. Come-alongs, tractors, horses, ATVs, etc. can generate a lot more force than 2 men and are really good at breaking pelvises, paralyzing cows, or even ripping calves in half. There are better ways to get calves out of cows, and if the producer is not able to pull the calf with the help of a friend, it is better to wait for the vet or euthanize the cow. Calf-Jacks ® are good tools, but proper training on

how to use these tools is imperative as they can generate a lot more force than 2 men if used wrong.

The third stage of labor is passage of the afterbirth. This generally happens within 12 hours of delivery of the calf, but can take as long as 48 hours and be completely normal. Cows that experience dystocia are at an elevated risk of experiencing retained fetal membranes, a condition that can lead to uterine infection and decreased fertility. Beef cattle rarely get systemically ill from retained membranes, but their presence can be quite troublesome to owners. Antibiotics, prostaglandins, oxytocin, and/or uterine lavage may be recommended by your herd veterinarian to treat the condition depending on the individual case history.

Getting the calf out is the first leg of the race. After delivery, the calf should be considered compromised and treated accordingly. Calves born through dystocia are often slow to breath, sit up, and stand as compared to normally delivered calves. Ensure that the calf either stands and nurses its dam within 1 hour or that it is tube-fed as close to 1 gallon of colostrum as possible. We recommend feeding the cow's colostrum first, but commercial colostrum replacer is an acceptable second choice. If the calf stands and nurses on its own, ensure it gets an adequate amount of colostrum by examining the cow's udder and watching calf nurse for an extended period of time. Make sure that there is no evidence of damage to the calf's legs, and if chains/ropes were placed around head, make sure there is no evidence of neurological damage. Keep calf and cow in clean, dry confined area for 12-24 hours (if cow will tolerate it) to ensure the pair bonds. This also allows the producer to watch cow for evidence of other commonly associated dystocia problems like nerve paralysis, hypocalcemia, prolapse, retained fetal membranes, or excess bleeding.