First Breath

Both unassisted and stressed births can result in an oxygen-deprived newborn calf — try these techniques to help the calf start breathing.

by ***Heather Smith Thomas***

In a normal, easy birth the calf is stimulated to start breathing as soon as its umbilical cord breaks, disrupting its lifeline from the dam, and/or when its face and nose are uncovered when the amnion sac comes off its head.

Sometimes after a hard birth, the calf has been without oxygen too long and is unable to start breathing. If the cord started to detach during birth, its lifeline is cut off and the calf will die unless it can start breathing quickly. Often these calves are limp and unconscious, with blue gums instead of healthy pink ones. At first glance you think they are dead, until you put a hand against the ribcage and feel the heart still beating.

Calves that are born swiftly and easily may also fail to start breathing if the amnion sac does not break. If the membrane and fluids remain over the calf's head and nostrils, it won't take a breath. This immersion reflex keeps the calf from drawing fluid into its lungs, but the reflex also means some calves die soon after birth — unless the cow gets up immediately and starts licking the membrane off and nudging the calf around to get him moving and breathing. If the calf goes too long without oxygen, it will suffocate.

The sac sometimes remains intact in a quick, easy birth. If the membrane is thin and easily broken, the calf can lift or shake his head and the amnion sac breaks. If the membrane is thick, however, the calf can't break it by itself. Some ranchers claim that thick sacs are a result of inadequate protein levels during pregnancy and that in some years, they've noticed more problems with unbroken sacs. Other ranchers don't find any particular pattern; some calves are at risk for suffocation with a thick amnion sac and others are not, even though all the cows were on the same feeding program.

The cow's instinct is to get up and lick her calf as soon as it is born, which generally resolves the problem. But if she's tired from labor or a first calf heifer, she may not get up quickly enough. Many of the birth losses due to failure of the sac to break are in first calf heifers — especially if it's such an easy birth that the calf slides out quickly, still encased, and the heifer may not realize she has a new baby and does not get up immediately to start licking it.

Unassisted births

In most normal, unassisted births, the calf begins breathing within the first minute after it is born. If you've pulled a calf and it is not breathing, clear the fluid away from its nose with your fingers and tickle the inside of one nostril with a clean piece of hay or straw. This technique usually makes the calf cough and take a breath. If it is unconscious and won't start breathing, you may need to give artificial respiration.

Traditionally, compromised calves (not breathing, with fluid in their airways) were held up by their hind legs. Stockmen and veterinarians thought that positioning the calf this way would allow fluid to drain from the airways. Today veterinarians don't recommend this strategy. They'll tell you that most of the fluids that drain from an upside down calf are stomach fluids important to a calf's health. Holding it up by the hind legs also puts pressure on the calf's diaphragm from all the abdominal organs as it hangs there, interfering with normal breathing movements. It's better to use a suction bulb to clear the airways.

Stressed births

If a calf was stressed during birth and doesn't begin breathing immediately, the problem may be that it is suffering from acidosis — a pH imbalance in its body caused by stress and shortage of oxygen — which has an adverse effect on proper functioning of the heart and the lungs. It may take several hours or even several days for the calf's body to correct this problem, according to Matt Miesner, DVM, clinical associate professor at Kansas State University.

If the calf is not breathing after being pulled, some

veterinarians will give the calf a small amount of bicarbonate intravenously to reverse the acidosis and perhaps some epinephrine to help stimulate the calf. "Breathing stimulants like doxapram can also be very effective if given within a few minutes of pulling a calf," Miesner says. Even if the calf is breathing, it may still need help to recover from a difficult birth.

One way to tell if it is normal or compromised, according to Montana rancher Ron Skinner, DVM, is whether the calf tries to raise its head and become upright rather than continuing to lie flat. If the calf just lies there, prop it up and rub it briskly to stimulate circulation. A calf can breathe better if it is upright; lung function and ribcage movement are impeded when it is lying flat.

If the calf is limp and unconscious, not breathing, but its heart is still beating, there's a chance you can get it breathing. The heart may be hammering so loudly you can hear it, as the body struggles desperately to survive without oxygen. If the calf doesn't start breathing soon, however, heartbeat becomes weaker, slower and very faint.

Heart rate is one way to tell if the calf is in respiratory distress. Normal heart rate in a newborn calf is 100 to 120 beats per minute. Place your hand over the lower left side of the ribcage, just behind and above the elbow of its front leg. If its heart rate has dropped below 50, the calf's condition is critical; it needs to start breathing immediately. If its gums are grey, blue or colorless instead of pink, it is in serious trouble.

If the calf isn't breathing, tickle his nostril by sticking a clean piece of hay or straw up into it. This will often make him cough and start breathing.

If upper airways are full of fluid you can often clear them with a suctioning action using your hand in the calf's mouth.

Giving artificial respiration

To get a calf breathing, first clear the airways. Roll it onto its breastbone in an upright position with chin resting on the ground and nose as low as possible; this position allows fluid to drain from its nostrils. If necessary, use your fingers to strip fluid from its mouth and nose in a suction-like action, like squeezing a tube of toothpaste or use a suction bulb. Even a turkey baster bulb works.

Then lay the calf on its side with head and neck extended so that the air will go into his windpipe and not his esophagus and stomach when you blow air into his nostril. This process is similar to giving CPR to a person; you tilt the head back so the esophagus is closed off and the airway is open. It's harder to do this in a calf, but if you can extend the head upward as you breathe into the nostril, this tends to close the throat, says Miesner. The air will follow the path of least resistance and you don't want it going into the stomach.

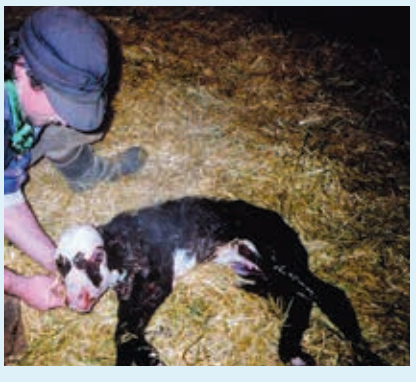
Miesner suggests inserting a small diameter tube into the nostril and windpipe to blow on (this is the most effective way to make sure you are blowing into the airway and not into the stomach), but if you don't have one, you can simply blow into the calf's nostril.

Cover one nostril tightly with your hand, holding the calf's mouth shut to prevent air escaping and gently blow a full breath into the other nostril, forcing air into the windpipe and lungs. Don't blow rapidly or forcefully or you might rupture a lung. Blow until you see the chest rise. Then let the air come back out. Blow in another breath until the chest rises again. Continue filling the lungs and letting them empty, until the calf starts breathing on its own. Usually, once the body tissues become less starved for oxygen, the heart rate will rise, and the calf will regain consciousness and start to breathe. **HW**

Starting the heart

If the calf has no heartbeat but hasn't gone too long without oxygen, you may be able to revive it. A few years ago our son and his wife pulled a big bull calf that they knew was alive when they started pulling — the feet jerked when they attached the chains. By the time the calf was delivered, however, it was limp, with eyes glazed, and no heartbeat — technically dead.

Frustrated and desperate, because he knew the calf had been alive just moments earlier, our son slammed his fist onto its ribcage, directly over the heart, and the calf's heart started beating again. His wife immediately began blowing into the calf's nostril, and our son rhythmically pushed on the ribcage to stimulate the heart, which soon started beating strongly on its own. After many minutes of artificial respiration, the calf regained consciousness. It took about 12 hours for that calf to recover enough to nurse its mother and it was fed colostrum by tube in the interim, but the recovery was complete with no ill effects from being "brought back to life." **HW**



How a calf is pulled makes a difference

When pulling a calf, use lots of lubricant, and always pull when the cow is straining and rest when she rests. Ron Skinner, DVM, a rancher from Montana, advises against a steady traction on the calf without this periodic let-up as it takes time for the cervix to dilate and the birth canal to stretch to its fullest capacity.

"A cow doesn't just squirt a calf out in two minutes when she's having a normal birth," Skinner says. "She'll get up and down, and push, and rest. The calf will make a little progress as she strains, then go back in a little. The cow keeps stretching a little more, gets up and walks around and lies back down. So you can take your time when pulling the calf, and if you only pull as the cow pushes, you only have to pull half as hard to get as much done. When she's not pushing, let the calf back."

Pulling constantly puts a constant pressure on the calf, impairing its blood circulation. "This is one reason some calves are unconscious and fail to start breathing when they are born," Skinner says.

"If it's really tight in the birth canal (and you can feel his elbows pop when they enter the birth canal because it's so tight), and you are constantly pulling on its legs that are tight against its head, its legs are putting pressure against its jugular veins. When I have a tight one like that, I'll pull when the cow pushes, four or five times, and then I'll push the calf back, to let it get some circulation to its head. After giving the cow a little time to rest, with the calf pushed back inside a bit just like she'd be doing out in the field when she gets up and walks around a little, I'll pull the calf out again. Once its head is out of the vulva to its eyebrows, then you can go ahead and finish pulling the calf. You can then get it out with a few more pulls because the cow is now stretched enough for it to come — and when it gets out he will usually breathe," Skinner explains.

"What happens with most of the calves that don't start breathing after they are born (even though they still have a heartbeat) is that we've impaired the circulation to their heads too long," Skinner explains.

"One of the things that stimulates the calf to breathe is the dropping level of oxygen in the bloodstream as when the umbilical cord breaks and he no longer has a constant supply of oxygen, and this triggers the brain to tell the calf to breathe. But if we've been pulling the calf with constant pressure, we've cut the circulation off to the brain enough that this trigger isn't happening; we've made him brain dead and this is why he won't breathe," Skinner says.

If you consistently allow a calf some periodic relief from pressure as you are pulling it, you'll rarely have a calf that won't breathe when it is finally delivered, according to Skinner. This pulling technique may take a little longer, but it's safer. You don't tear the cow's vagina or put the calf at risk. The calf does not have to breathe until the umbilical cord is squeezed off, and this separation won't happen until the calf is nearly fully born — unless it is coming backward. **HW**