



Bonding Issues and Mixed-up Mothers

Learn how to cope with moody heifers during calving season.

Story & photos by
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Most cattlemen have experienced frustrating situations in which a heifer is confused or indifferent toward her newborn calf. She may just lie there after the calf is born and fail to lick the calf dry. When she does get up, she seems surprised to see this strange wiggling creature behind her. She may walk away, ignoring it, or kick the calf when it staggers toward her. Some heifers attack the calf if it tries to get up.

Pulling a calf may disrupt the normal bonding process. Taking a cold newborn calf to the barn to warm and dry before its mother has a chance to lick it may also disrupt bonding.

Veterinarian and cattleman Joseph Stookey of the Western College of Veterinary Medicine in Saskatoon, Sask., says the bonding process, as the cow identifies her new calf and commits to caring for it and protecting it, is a complex blend of hormonal-induced and learned behavior.

Hormones initiate and drive most of what we perceive as maternal behavior.

“Some cows become interested in any newborn calf several days before they actually calve. Their hormone pump is already primed,” Stookey says. “Those hormones reach a level that makes them receptive to any new calf. An older cow already has the system primed. When she starts showing interest in other cows’ calves, you know she’ll be calving soon.

“At the other end of the spectrum are cows that calve and don’t have proper hormone profiles or levels, and don’t want their calf. We see this most often in first-calf heifers,” he says. The cow or heifer that rejects her calf needs more oxytocin — the “mothering” hormone in mammals. The reason a nonmotherly cow or heifer eventually accepts her calf is because more of this hormone begins to circulate after the calf suckles, though in a few instances it may take several days.

“We also see a problem in some of the females we assist or deliver

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by C-section. If it's too much of a rodeo getting the cow in for assistance, or they undergo too much trauma, you can expect them to be less interested in the newborn calf. There may be other hormones overriding the whole system, due to stress, pain, and perhaps some of the drugs used during a C-section," says Stookey.

Role of oxytocin

Changes in progesterone and estrogen levels initiate the birth process, but rising oxytocin levels trigger maternal behavior. Oxytocin is released in the cow's brain during birth. Its presence in the olfactory bulb of the brain helps explain the role of smell and the importance of odor in the

bonding process. The cow recognizes her own calf by smell and is always able to pick him out of a group of calves, Stookey says.

Cervical stimulation and release of hormones during the normal calving process play another significant role in initiating proper maternal behavior,

explains Stookey. Release of oxytocin is caused by stretching/stimulation of the cervix and birth canal. Studies with sheep showed that cervical stimulation (gradual dilation of the cervix as the feet of the fetus push against it with each uterine contraction, and then passage of the fetus through the cervix) is one of the triggers for oxytocin release.

A C-section doesn't result in much cervical stimulation, since the fetus doesn't have to come through the cervix. This could be another factor when the cow doesn't mother her calf as well. Cows who have had a C-section are six times more likely to reject their calf than cows having a normal birth, Stookey says.

Analgesic drugs used during a C-section can also interfere with oxytocin release, though he admits that pain relief can help a cow feel better, eat and drink after surgery, and feel up to mothering a calf more quickly.

Primed for motherhood

First-calf heifers produce less oxytocin than cows who've had previous calves. This explains why heifers may be less motherly and more apt to reject or abandon their calves.

"Giving birth seems to prime the system and allows for release of larger quantities of oxytocin with subsequent births. Heifers, therefore, have a disadvantage on two counts. They are less experienced than cows, and also have lower levels of oxytocin release in the brain during calving," he says.

A heifer may seem indifferent to her

Genetic component?

"I would like to put together a group of cows that have a history of rejecting their offspring to see if they do this every year," says Joseph Stookey, veterinarian with the Western College of Veterinary Medicine in Saskatoon, Sask. Some ranchers wonder if the problem might be heritable and whether they should keep a heifer from a cow that's slow to mother her calf.

For instance, a few years ago, when Stookey discovered that a heifer had calved, the calf had gone under the fence into a round pen. When Stookey got them back together, the heifer didn't want the calf. Several hours had elapsed since she calved, and he figured the window for good bonding was past, and that it wasn't the heifer's fault. She did raise the calf after assistance to help it suckle the first few times.

"I thought she would be fine the next year, but she wasn't. I was out there when she calved and observed

calf at first, then within 12-24 hours become more motherly as milk starts to come in and her udder tightens. Oxytocin is associated with milk letdown. If you can assist the calf in nursing, an indifferent heifer generally will become more receptive as the act of suckling stimulates oxytocin release.

“We often think we can resolve the problem by just giving a shot of oxytocin. It doesn’t work that way, however, because it doesn’t get to the brain,” he explains. Injected oxytocin goes to other places in the body, such as the cervix, the uterus or the mammary gland.

“It needs to go to the brain,” he emphasizes.

Putting the heifer in a chute to assist the calf to suckle stimulates the udder and causes milk letdown. That stimulation causes oxytocin release in the brain, so some of these cows/heifers become more motherly after the calf has nursed.”

A study of oxytocin in humans showed intranasal inhalation of oxytocin improves ability to recognize other people.

“There are some rare conditions in humans in which they don’t recognize people; it’s like they can’t see individual characteristics of facial features, so they can’t tell people apart. This study discovered that if the affected people inhaled a spray of intranasal oxytocin, they suddenly are able to process the visual clues and start recognizing people,” says Stookey.

Mothering ability also involves recognition — for a cow to bond with

that calf and recognize it forever afterward as her own.

“Maybe we can spray oxytocin into the cow’s nose and stimulate maternal behavior. We know it can get into the brain from the nose through the olfactory bulb. If you simply inject it into the cow, it won’t cross the blood/brain barrier. Going

through the nose would be a way to get it into the brain, where it needs to be,” he says, suggesting an interesting research project.

The normal cow bonds with her calf at birth, then mothers and protects that calf. When you wean him, she still wants him — but only him.

“She won’t accept a substitute,” he explains. “Even though she has a big udder and desperately wants her calf to nurse, she doesn’t want another calf.”

Cows only want the calf to which they are bonded, and there is recognition discrimination, he notes. They have to start

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her behavior. She lay down and calved, then got up and walked away and never looked back. She had no interest in that calf at all,” he recalls. “We had to help the calf suckle, and she again raised the calf.”

Her third calving was the same.

“I’m sure some cows do this every time, and always have a problem with bonding,” he says. This implies a genetic issue in the way their hormones function. A producer should probably cull heifers that don’t accept their calf — especially the ones you have to fuss with for several days or weeks — because they may do it again the next year. Some only need assistance for the first nursing and then they mother the calf, yet they have this issue every year.

Since there is likely a genetic component, a producer would probably be wise to never keep a heifer or a bull from a nonmotherly cow.

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the bonding process at calving, and they need oxytocin to do it.

“Without this hormone, the cow will not be maternal, and will not discriminate or remember who her calf is,” he says. In those situations you have to restrain the cow each time the calf needs to nurse until she accepts it and quits kicking.

Stookey recounts an instance when a cow didn’t accept her newborn so he went to find some colostrum for the calf.

“When I got back to the barn, I could hear her gently mooing and realized she was now mothering that calf. She’d passed the afterbirth and started taking care of the calf. The next year, it was the same thing.

She didn’t want the calf at first, then after she had more contractions and expelled the afterbirth, she accepted the calf. She just needed that extra bit of oxytocin that came with more contraction of the uterus to expel the placenta. That was enough to start the system of motherhood,” he says.

Stress alters hormone profile

Some cows have more problems if they had to be assisted at calving.

“We know that assistance increases the incidence of rejection. This is probably due to stress and production of cortisol, a hormone that can interfere with oxytocin release,” says Stookey. “This is good reason to try to minimize stress as much as possible when you have to assist a birth,” says Stookey.

If you have to get a cow or heifer into a pen or barn to restrain and assist her, do so as quietly and calmly as possible.

“I tell my students that it helps to bring in more than one. Bringing one in by herself is very stressful and can turn into a rodeo,” he explains. “Even if you have to haul her to the veterinary clinic, load another one to ride in with her.”

If you put her through a chute, take her there with a buddy, he advises. Just catch the one you need to assist, and let the other one go. Working as calmly as possible can greatly reduce stress.

Ways to encourage bonding

Several things may help facilitate bonding when a cow is indifferent to her calf. Some of these tricks have been learned by trial and error, and what

**Patience, not punishment**

It’s frustrating to deal with a cow or heifer that doesn’t want her calf. Joseph Stookey, veterinarian with the Western College of Veterinary Medicine in Saskatoon, Sask., says, “Since the problem is hormone-related, a person shouldn’t lose patience with that animal; she’s not intentionally being a bad mother. You would never beat on a heifer in anger, for instance, for not becoming pregnant. You’d just realize that she didn’t cycle in time or whatever.”

“We tend to use the logic that ‘it’s her calf so she should mother it,’ and it bothers us that a cow would reject her own offspring,” says Stookey.

When you know it’s hormonally driven, you realize that it won’t help to try to punish that animal with physical retribution.

“If the cow kicks or head-butts her calf, they want to [discipline] hit her. Yet she is simply treating this calf like she’d treat any calf that wasn’t hers,” he explains.



Hobbling an indifferent or aggressive heifer to allow the calf to suckle may help stimulate oxytocin release.

works with one species may also work with another.

Stookey at one point managed the sheep unit at a University of Illinois research station.

“One year we lambed out 300 Texas ewes that were range-raised and wild,” he recalls. “When we tried to lamb them, there were a few that needed assistance. You’d corner the ewe, lay her down on her side and pull the lamb, but when you let her jump up, she’d take off, run over the hill and never look back.

“We learned on those that if you

“You cannot correct the hormonal profile of a heifer/cow by rough handling. If she rejects her calf by kicking or head butting, simply take steps to keep her from doing so by restraining her in a headgate, hobbling her, etc., and help the calf nurse until she allows him to nurse on his own,” Stookey adds. “It may take hours or days for her to accept the calf, but you cannot speed up the process by getting mad at the cow.”

He suggests, “Perhaps there are better candidates in the herd (cows that mothered a calf, but it died; or a cow that has given birth to a dead calf and still wants one) that will accept a calf with very little work, and they can become a surrogate mother. No one says a cow that rejects her calf has to be the one that raises it, especially if you have a better candidate. Don’t waste your time on a cow that gives every indication she doesn’t want her calf, when you have a better candidate sitting on the sidelines that wants a calf.”

smear birth fluids over the muzzle, into the mouth and across the tongue, those ewes — even if they ran away — would start licking their lips and jump-start that hormonal process,” he continues. “They would come back looking for the lamb. So this became our routine practice.”

Stookey says he uses the same technique

on cattle when he has to do a C-section or handle dystocia.

“Before you let the cow out of the headcatch or get her up, drag some birth fluids across the muzzle and into her mouth,” he advises.

Birth fluids seem to turn on the mothering response, says Stookey. “If

the cow can start licking the calf, she will generally mother it. If a cow or heifer is slow to lick her calf, some people pour feed over the calf to get her to sniff and lick around that calf and taste the birth fluids.”

Some ranchers use commercial products like O-No-Mo (orphan no more) or Calf
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Claim to sprinkle over the calf. The smell and taste seem to entice the cow to start licking the calf, and this sometimes helps start the bonding process. Sometimes only suckling works.

“The ones that don’t have the right hormones on board are sometimes so far off that you can’t get it there, even with

a few milk letdowns as the calf suckles,” he says. In many instances, however, the hormonal trigger is just delayed, and all it takes is restraining the cow, tying a leg back so she can’t kick, and letting the calf nurse.

Some heifers that reject their calves need to be restrained for several nursing

sessions or even for days or weeks before they accept the calf. What might work for one might not work for another. It usually helps to keep the pair in a small pen and to have the cow or heifer hobbled so she can’t kick the calf. If she is aggressive toward the calf, they’ll have to be in separate adjacent pens.



Restraining a cow to allow a calf to suckle can help initiate the bonding process.

You may not need to restrain the cow when you put them together. You may be able to simply supervise the pair to prevent the cow from running off or butting the calf. In a small pen you can feed the cow at nursing time so she’ll be more interested in eating than trying to avoid the calf. Then one day you may notice she’s standing next to the calf’s pen, mooing softly, and it will be safe to put them together.

Sheepmen often put an extra lamb on a ewe that only has a single (since some ewes have triplets and do best raising just two).

“There has been a lot of research done on how to trick a ewe, and one study looked at use of sedatives such as Rompun™ or xylazine. While the ewe is drugged, the newborn can nurse a couple times, and the ewe doesn’t seem to fight it. As these ewes come out of their stupor, some of them will accept that lamb,” he says. This has also worked with cattle. Producers can consult with their veterinarian if they want to try this.

Montana veterinarian and cattleman Ron Skinner found this very effective with problematic heifers or cows he wanted to graft an orphan onto. He tranquilizes the cow with acepromazine (Ace) and adds a little Rompun (a painkiller). Using Ace and Rompun together in very small doses works well, he says.

The Rompun often helps with a first-calf heifer because it takes the feeling out of her udder if it’s sore, he explains. Often a heifer has a lot of swelling in her udder. It’s tender and sensitive, and she doesn’t want the calf to nurse. A little tranquilizer and painkiller makes a nice combination.

Skinner recommends using 1.5 cc of Ace and just a little Rompun. Your veterinarian could prescribe the drugs or have suggestions for other drugs/combinations to try.



Overly aggressive mother

A few heifers and cows go crazy after they calve, smelling the newborn then bellowing and attacking. It's as if they don't know what to do with this new baby, and the protective instinct is working overtime, treating it like they would a predator. Some ignore the calf until it tries to get up, and then they attack it. Some actively reject the calf and ram it around even more when it tries to get up.

Others will lick the calf in the midst of this aggressive attitude, and if the calf is ever able to get to its feet and find the udder and nurse, the cow settles down. Usually, if the cow is licking the calf at the same time she is bellowing and rooting it around, the proper hormones will kick in and she will simmer down and mother the calf. Everything will be fine — if she doesn't push it under a fence, ram it into a stall wall and hurt it, or chew its ears or tail off in aggressive licking. Some, however, just attack their newborn every year and never become good mothers.

"We see overaggressive behavior in sheep as well; some ewes lick and clean that lamb so vigorously that they eat the navel off and eat the ends of their tails, sometimes clear up to the rump. Sows can be overly aggressive, too, sometimes to the point of eating their own piglets," says veterinarian Joseph Stookey.

Some cows are such aggressive mothers that they not only "get with the program," vigorously licking up their calf, bellowing and rooting it around, but are also aggressive to humans that get too close. The "protective" motherly instinct goes into overdrive, and the cow becomes a danger to anyone who comes near the calf.

This behavior has nothing to do with whether they are good mothers and will protect their calves against predators; many easy-to-handle cows that trust and respect humans (and allow their calves to be tagged, weighed, or navels disinfected at birth) are very aggressive if a dog or predator shows up.

"If something is actually threatening their calf, they are very protective. We don't really need 'man-killer' cows to protect

calves against predators," he says.

"We don't need cows that hunt you down when they have a new calf. Life is too short and our loved ones too precious to tolerate overly aggressive behavior. There are plenty of cows that are good

mothers who will protect their calves against predators, but at the same time tolerate humans around their newborn calves. Many of the overly aggressive cows raise good calves, but the value of those calves (raised by aggressive cows)

will never equal the value of a producer's health or life, nor that of a loved one. You should cull overly aggressive cows and not take the same chance again next year."

— by Heather Smith Thomas