

Newborn Calf Necessities

Strategies to increase calf survival at birth include more than administering colostrum.



PHOTO BY TROY SMITH

Colorado State University professor Frank Garry advises that focusing on the first three to seven days of a newborn calf's life is most critical. Catch his interview for *The Angus Report* by visiting <http://bit.ly/RBCS15garryINT>.

by **KINDRA GORDON**, *field editor*

Producers recognize that losing a newborn calf is costly, but just how costly? Frank Garry, a veterinarian and coordinator for Colorado State University's Integrated Livestock Management, offers this estimate: For every calf that dies that would have been sold at 550 pounds (lb.), you would need to increase weaning weight of the next 11 calves by 50 lb. each to make up the income loss difference.

With that perspective, employing

As part of the *Angus Journal's* full meeting coverage, you can listen to Frank Garry's presentation at <http://bit.ly/1n9HBRe>.

strategies to increase calf survival is of utmost importance. Garry advises that focusing on the first three to seven days of a newborn calf's life is most critical. He shares that 5%-8% of beef calf death loss occurs between delivery and weaning time. Of that 5%-8%, 50% of newborn calves die within the first 24 hours of life, 70% die by Day 3, and 75% die within the first week.

Garry explains that the reason for these high mortality statistics is because the transition from the "swimming pool environment" of the uterus to the outside world is a tremendous physiological transition.

"To adapt to life outside the uterus," he states, "every single organ must change — some immediately at birth and some within the first three days, and this transition is not always successful."

Specifically, Garry notes that organ system changes that must occur include respiratory, cardiovascular, metabolic, fluid balance, thermoregulation,

musculoskeletal and neurologic.

"It's a radical transition," Garry says. "The calf's system has to change right now, and if it doesn't do that, the calf is dead."

As an example, Garry points to thermoregulation. In the uterus the calf is in a comfortable thermal environment at 102° F or higher. When it's born, it is suddenly exposed to the environment and needs to try to maintain its body temperature.

Taking its first breath of oxygen to initiate blood oxygenation is another example.

"The calf has never done this before," Garry explains. "Very little blood flows through the lungs while in the uterus. So when a calf is born, it has to take a couple big breaths to get lots of blood to the

lungs and to get oxygen delivery to the system. Physical and muscular activity is a big part of this. The calf needs to be able to be strong and active to start this process."

With an understanding

of all these organ-system changes occurring in the newborn calf, Garry says, producers can be better equipped to provide neonatal calf assistance to improve survival. In fact, he suggests nursing care must be a producer's "Number 1 attack plan for weak calves" and suggests there are strategies (see Three Important Steps listed later) as important — and possibly more important in the critical first hours — than colostrum's immunity boost.

"Immunoglobulins are important in

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the long run, but in the first three days of life the calf first needs warmth, nutrition and fluid, and those are critical things that colostrum provides,” Garry says.

Which calves need help?

Most often calves need extra assistance when they’ve experienced calving difficulty or dystocia, Garry notes. Additionally, premature birth, illness in the dam, or *in-*

utero problems can produce weak calves that require extra assistance.

All of these instances can cause what Garry calls a “vicious cycle of bad things happening” for the newborn calf. These include decreased activity, lethargy, low blood oxygen, low body temperature and

delayed intake of colostrum, which in turn causes decreased energy/nutrient intake, decreased fluid volume, decreased immunoglobulin consumption and decreased disease resistance.

Garry reports that studies have been done to assess newborn calf vigor. The signs to look for include the calf lifting its head up, sternal recumbence (lying upright on the chest), attempting to stand and standing. The newborn should be doing these things at 3, 5, 20 and 60 minutes, respectively, according to Garry.

“Monitor all of those signs,” he adds. “If it takes 15 minutes or longer for the newborn to get to sternal recumbence, studies have shown it equals an 84% prediction of nonvitality.”

Based on those indicators, Garry says, “If the calf is slow to adapt, take its body temperature. The body temperature should not drop below 101° F. If it is below that, the calf needs your help.”

Three important steps

When a newborn calf does need help, Garry says there are three important steps to follow:

1. Stimulate and enhance respiration for the calf.
2. Maintain body temperature of the calf.
3. Increase blood volume and provide energy to the calf.

For Step 1, enhancing respiration,

Checklist of healthy newborn calves

If newborn calves have the following experiences, they have a good chance of survival:

- uncomplicated vaginal delivery;
- standing within one hour after birth;
- good mothering;
- body temperature maintained at 101°-102° F;
- active suckling within two hours; and
- attentive, responsive and active.

Colorado State University’s Frank Garry notes that the role of the dam in postnatal survival should include mothering and neonatal bonding.

“Good mothering means the cow pushes the calf around, licks it, dries it and makes it respond,” he explains. “Cows often lick the calf around the tail head and the calf puts its tongue out indicating it’s ready to stand and nurse.”

Garry notes that heifers are commonly not as good at mothering.

“If she doesn’t do that, it’s your job,” he says.

Garry advises placing the calf in sternal recumbency. This means positioning the calf with its back legs forward so it can lie on its chest to keep the lungs vertical.

“This position helps them breathe — and also pesters them to get them alert,” Garry explains.

Once calves are in that position, remove any mucus from the airway in the nostrils by positioning the calf's head downward briefly and using a straw or tube to stimulate their airway and make them breathe. Also, provide vigorous rubbing on the chest to help dry the calf's hair and stimulate its internal organs.

In some situations, additional oxygen may need to be administered with tubing placed in the nose or through use of a resuscitation facemask that fits over the nose. Garry cautions about placing any tubing too far down into the esophagus or stomach. If administering oxygen, a flow rate of 2-4 liters per minute should be used.

To achieve the second step of maintaining body temperature, Garry points out that it is important to understand that newborns generate heat three ways: through physical activity, through shivering and from the brown fat they are born with.

Garry reports that shivering of skin and skeletal muscle increases heat production by 33%-100%. Additionally, physical activity, such as trying to stand, increases heat production by 33%-100%.

“In the first 10 minutes of standing, a calf increases heat production by 100%. Calves that do not try to stand get very cold very fast,” says Garry.

Garry notes that calves lose heat as soon as they are born via evaporation. To reduce this heat loss, it is important to get newborns who aren't trying to stand dry as quickly as possible. Rubbing them to get them dry also helps stimulate respiration.

Garry advises if a calf's temperature is 100° F or less, a supplemental heat source or warm shelter should be provided. He reports that research has shown that using an infrared heater for 24 hours postpartum provided significant improvements to rectal temperature, dynamic lung compliance and respiratory rate of newborn calves.

Supplemental heat sources such as heaters, hot water bottles, a warming hut or calf jacket/blankets, as well as providing straw or other bedding and reducing exposure to wind, are all beneficial strategies.

The third step of increasing blood volume and providing energy to the calf means ensuring the calf receives colostrum.

Garry notes that most people think about supplying colostrum to provide the immunity protection from immunoglobulins. However, he emphasizes that colostrum is important for additional reasons — providing energy, protein, vitamins and minerals to give the calf energy for activity. Plus, the fluids and warmth from the colostrum

aid the calf's bodily functions of blood volume expansion, energy metabolism and respiratory ventilation.

Garry concludes by emphasizing that newborn calf care requires vigilance. When producers recognize that a calf needs assistance, these steps may help

increase the calf's chance of survival and the producer's opportunity for profit.



Editor's Note: Kindra Gordon is a freelancer and cattlemaster from Whitewood, S.D. This feature is part of the Angus Journal's coverage of the 2015

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