Merri Melde

The Importance of Colostrum

Fast and safe delivery of the antibodies in colostrum can put a new foal on a healthy track

BY HEATHER SMITH THOMAS

Most horsemen and horsewomen realize that newborn foals need colostrum within the first few hours after birth, but the sooner the foal ingests the colostrum, the better. Several studies have shown the importance of this form of antibody-rich milk in helping prevent disease in young foals. John Madigan, DVM, from the University of California, Davis, says the amount of colostrum a foal has ingested can be quantified with an IgG test to know if the foal has obtained adequate antibodies.

"There are many other things that colostrum does locally in the gut, however, to help the foal," he said. "It's a natural laxative and also has glucose and energy that give the foal more strength to stand and nurse or deal with inclement weather or other stresses. It stimulates systemic immune response; there are activated immune cells that transfer right across the intestinal tract and trigger rapid development of the immune response. All of these factors suggest that early ingestion of colostrum would be good."

Several years ago, he started recommending hand-feeding colostrum before the foal gets up.

"This was based on evidence that foals, during the process of seeking the udder, can acquire bacteria that go into the intestinal tract and cross what we call the open gut," said Dr. Madigan. "The intestinal lining is permeable for a short time, to allow the large molecules of antibodies in colostrum to slip through into the bloodstream and lymph system, but this also enables bacteria to slip through.

"On a farm where we experienced a large salmonella outbreak, we began this process of getting colostrum into the foals before they nurse the mare, along with washing the mare down and having a clean udder before the foal nurses," he continued. "After a mare passes her placenta, there's a lot of contamination; because mares defecate in stage two labor, there is bacteria on her and on the afterbirth. Having a clean spot for the foal to nurse is very important. Once the udder is cleaned up, we milk the mare (obtaining anywhere from two to eight ounces of colostrum)."

He recommends use of the Udderly EZ Milker, a hand-held, trigger operated pump with a bottle attached. This makes the milking much easier, faster and safer, and it's less irritating to the mare than using your fingers because there is no friction on the teat. The bottle can be filled within seconds, and then it can be detached from the pump, a nipple put on it and the colostrum fed to the foal.

"While the foal is still lying there and starting tongue movement and suck reflex, we feed him from a bottle," he stated. "He may have tried to get up but hasn't gained his feet, yet has already started making sucking motions. We just put the bottle in his mouth. We found that these foals take a bottle very readily, before they stand up."

Once they've tried to stand up, they have too much mental activity geared toward getting up, and may not be as cooperative; they are focused so strongly on getting up and going to the mare. But the suckle reflex is very strong right after birth, and foals will readily suck a bottle that is offered, before they get up.

He cautions horsemen to be careful in trying to feed a foal that does not have a strong willingness to suck.

"Weak foals without a good suckle reflex should not be bottle-fed, as they might aspirate some of the milk (it may go down the windpipe instead of being swallowed, setting the stage for aspiration pneumonia)," he advised. "Healthy newborn foals with a strong suckle reflex prior to standing, however, can be safely offered a bottle for them to suck and ingest colostrum."

This will not confuse them nor prevent them from going ahead in their urge to find the udder.

"At that stage, this does not disorient them from finding the udder," he said. "They don't know where that milk came from; it merely stimulates them to want to get up and look for more. So this was part of our treatment in prevention strategy, to protect the foal from early infection with salmonella, and it was very effective."

Since then, Dr. Madigan has found that some other veterinary practitioners' farms have done this successfully for many years.

"A lot of farms have implemented this and feel that it has great benefit," he said. "It's a very

Although many foals will nurse immediately after birth, the use of a product such as the Udderly EZ Milker can greatly reduce the risk of bacteria being ransmitted from the mare to the foal.

Courtesy Buck Wheeler

Dr. John Madigan recommends bottle-feeding a new foal before it stands up to ensure that colostrum is introduced into the foal's system as quickly as possible.

Courtesy Buck Wheeler

simple thing to do."

When a foal is born, it's a race between the pathogens and the antibodies. This simple technique gets the colostrum into the gut ahead of the bacteria. It stimulates systemic immunity and gives local coating of the gut, providing antibodies to combat pathogens that are ingested during udder-seeking. The laxative effect also helps with meconium passage. These are all good things that can be gained by early ingestion of colostrum.

Septic foal syndrome

If the foal encounters bacteria (and their toxins) that slip through the gut wall into the bloodstream, he may become acutely ill. Septicemia (generalized infection throughout the body) is difficult to treat and is the major cause of foal deaths.

"The GI tract is the leading source of infection in foals," said Dr. Madigan. "The umbilicus is not the primary site of infection, as was once thought. So-called navel ill (infection that enters via the umbilical stump and gets into the bloodstream to attack multiple organs or settle in the joints) affects a certain percentage of foals, but most septicemias do not start this way. We believe the gastrointestinal route is the source of most cases."

The foal goes through several stages: early sepsis and SIRS (systemic inflammatory response syndrome) and then the foal goes into septic shock. Once the foal goes into shock, it is very difficult to reverse the condition and have a good outcome, so you want to prevent this. Getting colostrum (and its antibodies) into the foal before the pathogens are ingested is probably the best prevention measure that horse breeders can use.

Heading off the pathogens

If the "good guys" (the antibodies in colostrum) get to the gut first, they tend to close the door, so to speak, on the pathogenic organisms that might cause serious disease, preventing penetration of the intestinal lining by bacteria and their toxins.

"It has been shown in experimental models in other species that absorption of antibodies from colostrum inhibits what's called bacterial translocation," said Dr. Madigan. "The colostrum provides a local antibody, IgA, which is present in the gut (besides IgG molecules that go through into the bloodstream). The IgA stays in the gut to give protection. There is enough evidence in experimental literature to say that colostrum prevents and reduces bacterial translocation in foals as well."

Mother Nature has everything programmed very well to protect the newborn. A number of circumstances, however, can delay a foal in getting the colostrum quickly, or he may lick the ground or contaminated objects before he actually nurses.

"If the foal is weak, a little short on oxygen at birth or has angular limb problems, adverse environmental conditions, or the mare has a sore and tender udder—anything that slows the getting up and delays the first nursing—this can interfere with protection," Dr. Madigan explained. "If the foal is slow to find the udder, he's hungry and may be licking on anything and more at risk for bacterial translocation.

"If you can get some colostrum into the foal soon after birth, he'll have a better chance of accomplishing a proper nursing and be off to a healthier start," Dr. Madigan advised. ★