

Down on the Farm



Feeding and Care of the Orphan Foal

by **DR. JOE D. PAGAN**

At some point, every breeding farm is faced with having to raise an orphan foal. Foals can become orphaned for a number of reasons. Problems can occur during pregnancy or delivery that make it impossible for a mare to raise her foal naturally. Unfortunately, some foals may be orphaned by the death of their dams during delivery or from complications resulting from it. This is common in very old mares that rupture uterine arteries. Other times, the farm manager chooses to remove the foal from an old mare to avoid the stress of lactation which may compromise getting the mare pregnant again. In yet other cases, the broodmare simply is not a good mother and may even try to harm the foal. Broodmares that are to be shipped long distances for rebreeding often have their foals weaned at a very early age so the foal does not have to endure the stress of shipping.

In each of these instances, the farm manager must decide how to raise the orphan foal. A variety of options are available, and the course taken with an individual foal will depend upon a number of factors.

Foals orphaned at a very early age should either be placed on a foster "nurse" mare or receive an artificial milk substitute. In either case, it is imperative that the newborn receives

adequate quantities of colostrum. Obviously, if the mare dies at birth, the foal must be given colostrum from another mare. Many breeding farms keep frozen colostrum from other mares for this purpose, while stores of frozen colostrum are also kept in banks by veterinary clinics. The orphan foal is going to experience a great deal of stress regardless of how it is raised, and it is important that it receives plenty of antibodies via colostrum during the first hours of its life. If a foal is to be weaned early, it is preferable that it be allowed to suckle from its dam for the first two or three days before weaning to insure that it receives adequate colostrum.

In an effort to be certain that newborn foals have received the full benefits of this valuable early milk, many farms draw blood from the foals between 12 and 24 hours after birth to have it analyzed. The results of the blood test, often called a foal profile, can indicate if the foal has received proper immunities from the colostrum. Central Kentucky veterinarian Dr. Charles Walker states, "The test we do to measure a foal's immunity is called an IgG test or immunoglobulin test. A foal that has received the proper immunity from its dam's colostrum will have an IgG count of 1,000 to 1,300. If the test comes back with a count of 100 or so, there are a few options, one of which is to provide the foal with a

transfusion from a horse with good immunities. Even with this, it is difficult to effect a change of more than 100 or 200 points. Good colostrum is essential for the health of the foal."

Nurse Mares

Draft breeds and draft crosses are usually used as nurse mares because they have easygoing dispositions and tolerate the adoption process well. The cost to lease a nurse mare for a season generally ranges from \$700 to \$1,000. Nurse mares have been used to raise orphan foals for as long as horses have been raised domestically, and there is no doubt that many fine horses have gotten their start on a nurse mare. Still, there are some considerations that need to be made before this option is chosen to raise an orphan foal. First, the expense of leasing a mare may be a concern for raising a foal that is not very valuable.

Of greater concern, regardless of the value of the foal, is the quality and quantity of milk received by the foal suckling a nurse mare. The amount of milk produced by draft mares may not be suitable for Thoroughbred or Standardbred foals. Milk production in mares is generally proportional to the mare's body weight with mares producing around three percent of their body weight per day as fluid milk. A 1,300 pound Thoroughbred mare would therefore produce about 39 pounds of milk per day and this amount of milk

should provide enough energy, protein and minerals to support her foal's growth. If this foal is weaned onto a 1,800 pound Belgian mare that is capable of producing 54 pounds of milk per day, what will the effect be on the growth of the foal? The growth rate of foals is dependent upon energy and protein intake. Rapid growth rates resulting from high levels of these nutrients may predispose the suckling foal to a number of skeletal problems.

Another consideration is the stage of lactation of the nurse mare. Mares produce higher levels of protein, lipids and lactose directly after foaling. Those levels decrease over the following weeks and months. If a young foal is placed on a mare that has been lactating for five months, the mare's milk may not contain the levels of essential nutrients that the adopted foal may need. Table 1 shows some of the differences in nutrient content relative to the stages of lactation.

In a study done by Kentucky Equine Research Inc., growth rates of foals raised on nurse mares were compared to growth rates of foals raised on their natural dams as well as foals weaned at five days of age and fed milk replacer. The foals raised on nurse mares were larger than the other groups of foals at the end of the six-month study, and they grew faster during the first three months of age.

Milk Replacer

Another alternative for raising orphan foals is milk replacer. This option is usually not taken by breeders because of bad experiences that they have had in the past. Some of the problems like scours or upset stomachs have been resolved by the development of better milk replacer formulas. Intensely managing the amount and timing of the feedings also helps to eliminate some of these problems, but is obviously more labor intensive than raising the foal on a nurse mare. This can be a drawback for some breeders.

There are several excellent milk replacers for foals on the market today. They are formulated to mimic the nutrient composition of a mare's milk, and many have additional fortification with trace minerals and vitamins. They are only good, however, if fed properly. Foals

normally suckle from the mare dozens of times during a day and ingest relatively small quantities of milk during each nursing session. The digestive tract of a very young foal is simple and fairly undeveloped. When a foal is first born, its ability to absorb antibodies from its dam's colostrum declines after 24 hours. The small intestine is permeable to protein for a brief period of usually under 36 hours. As the foal matures, its nutrient requirements change and its digestive tract matures. Feeding large quantities of milk in a single meal, especially to very young foals, will overwhelm the digestive tract's ability to digest and absorb the sugars and protein in the milk, which will then lead to diarrhea and the "pot-bellied" appearance so often seen in foals fed milk replacer.

ly develop "foal heat" scours. Since these foals were not with their dams, the scouring was not caused by foal heat. Perhaps scouring at this age is related to a change in the gut pH and microflora. Treating the foals with probiotics (lactic acid bacteria) seemed to reduce the severity of scours, and the foals usually got over their scours within two or three days without losing their appetites or developing a fever. If a scouring foal maintains its appetite and does not develop a fever, it is probably best not to treat it with antibiotics since treatment may further disrupt the gut microflora and prolong the problem.

Foals raised on milk replacer should be offered small amounts of high quality creep feed beginning at two weeks of age. Intake should be gradually increased

Table 1.

Time	Protein (%)	Fat (%)	Calcium	Phosphorus	Potassium
			(concentration (ug/g of fluid milk))		
1-4 weeks	2.7	1.8	1,200	725	700
5-8 weeks	2.2	1.7	1,000	600	500
9-21 weeks	1.8	1.4	800	500	400

The trick to feeding milk replacer to young horses is to feed small amounts, and often. When starting a foal, no more than two quarts of milk replacer should be offered at one time. The milk should be fed in a dilute form (1/4 pound of dry milk replacer added to one quart of warm water). Studies at Kentucky Equine Research have shown that foals fed two quarts of milk replacer six times per day, gained less weight than control foals during the first month of age. Their height gains, however, were similar. After one month, their weight and height gains were similar to control foals. In order to mimic normal growth rates in foals during the first month of age, it would be necessary to feed 16 quarts per day, or eight times per day. Feeding this amount of milk in less than eight feedings per day would almost certainly result in problems.

An interesting observation from this study was that every foal fed the milk replacer developed diarrhea at between seven and 14 days of age. This is the same period that suckling foals normal-

ly develop "foal heat" scours. Since these foals were not with their dams, the scouring was not caused by foal heat. Perhaps scouring at this age is related to a change in the gut pH and microflora. Treating the foals with probiotics (lactic acid bacteria) seemed to reduce the severity of scours, and the foals usually got over their scours within two or three days without losing their appetites or developing a fever. If a scouring foal maintains its appetite and does not develop a fever, it is probably best not to treat it with antibiotics since treatment may further disrupt the gut microflora and prolong the problem.

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to about 1/4 pound per week, until the foal is eating about three pounds of feed per day at three months of age. At this point, the milk replacer intake can be reduced by one quart per day until the foal is completely weaned. It is certainly possible to raise a healthy orphan foal, but particular care must be given to the changing nutritional needs of the foal. Too much milk can cause growth problems as can milk with inappropriate levels of nutrients. Matching a nurse mare's size and stage of lactation to that of the dam of the orphan foal would be an ideal situation for breeders choosing this option. For foals being raised on milk replacer, it is essential to carefully monitor the amount and timing of feedings and to pay close attention to providing a balanced diet as the foal is weaned from the milk replacer.

This article was provided by
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