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G95-1237 Feeding and Care of Orphaned Foals

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Feeding and Care of Orphaned Foals

This publication stresses the importance of care and feeding when foals are orphaned.

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Feeding and raising orphaned foals can be an extreme challenge particularly if the foal was orphaned at birth. Losing a mare is never expected and being left with a motherless orphan can turn into an unexpected nightmare. Intensive management will optimize the foal's survival chances.

First 24 Hours

The primary concern for foals orphaned at birth must be that the foal has received sufficient amounts of colostrum. Colostrum, or a mare's first milk, contains a high concentration of immunoglobins (antibodies) to protect the foal from disease and infection. Colostrum is secreted by the mare during the first 24 to 48 hours following parturition. There is no placental transfer of antibodies during pregnancy from mare to fetus, thus the foal is born without any protection from disease. Antibodies are acquired by the nursing foal through the colostrum, (passive transfer), to protect the newborn against diseases.

Gastrointestinal tract absorption of colostrum begins to decrease after 12 hours, with minimal absorption occurring 24 hours after birth. Ideally a foal should receive 250 ml of colostrum every hour for the first six hours after birth. Colostrum can be bottle fed, or administered via stomach tube by a veterinarian. A total of two to three liters of colostrum should be divided into three to four doses given at hourly intervals.

Foals that do not receive sufficient colostrum within the first 24 hours can receive 2-4 liters of blood plasma intravenously. Normal equine plasma may be purchased commercially (Foalimmune, Lake Immunogenics, Inc., Ontario, NY; Equine Plasma, Veterinary Dynamics, Inc. Chino, CA) for over \$100 per liter. Intravenous infusion should be done under veterinary supervision. Plasma may be prepared

locally if an acceptable donor horse and equipment are available. Without either colostrum or plasma, foals will have insufficient antibody protection and will most likely succumb to infection.

From 12 to 36 hours after birth, evaluation of the serum antibody level (IgG) in the foal is recommended. "Failure of passive transfer" (FPT) is defined as inadequate level of antibodies or IgG of below 200 mg/dl at 24 hours of age. University of Florida studies have shown that foals with total FPT (no antibody protection) have a 75 percent chance of becoming ill. Foals with partial FPT have a 50 percent chance of becoming ill.

Several tests can be used to evaluate the antibody level in the blood of a day-old foal. New tests include radio immunodiffusion tests, latex agglutination test, and enzyme immunoassay tests (CITE). These various tests all require a small blood sample and are available from veterinarians. Regardless of the test, an IgG level of >800mg/dl is considered adequate.

Collection and Storage of Colostrum

Colostrum can be collected from mares post-foaling when sufficient amounts are present. It has been shown, 200 to 500 ml can be milked from such a mare without compromising antibody passage to her own newborn foal. Additionally, if a mare is at risk of dying, colostrum should be harvested from her before the loss of the mare. Freezing colostrum is adequate for preservation and should have a shelf life of one year if kept frozen. Stored colostrum should be thawed at room temperature just before use. Do not thaw by microwave as essential antibodies can be destroyed.

Large broodmare farms routinely collect colostrum and freeze it to maintain a "colostrum bank" in cases of emergency. A quantitative measurement of antibody production in colostrum can be obtained by use of a colostrometer (Lane Manufacturing). The colostrometer measures the specific gravity of a milk sample: the higher specific gravity, the larger the concentration of immunoglobins. Normal colostrum should have 1500 to 5000 mg/dl of Immuno-globulin IgG.

Feeding Program

Once sufficient immune protection has been established, some type of continued nutritional plan must begin. Normally, foals nurse up to seventeen times an hour during the first week of life. Nursing frequency decreases to three times per hour in the first few weeks of life. There are two basic options to provide sufficient nutrition to the orphaned foal -- use a nurse mare or goat, or manually feed the orphaned foal.

Obtaining a nurse mare would generally be highly desirable as it would greatly reduce labor. Unfortunately, in Nebraska, nurse mares can be hard to find. Another potential problem includes convincing the nurse mare to accept the foal. One substitute is to use goat's milk by purchasing a milk-producing goat. Some orphan foals have been fostered onto nanny goats with minimal restraint. These goats can be placed on hay bales or platforms so the foal can nurse. As the foal grows, the goat may not provide enough milk and supplemental feed is required.

Most commonly, however, an intensive manual feeding program is developed. Initially, foals should be bottle fed either mare's milk, goat's milk, or a powdered mare's milk replacer ration. Many mare's milk replacer powders are commercially available. Also listed below are recipes for homemade milk replacers. Mare's milk replacers are preferred over milk replacers made for other species. Fresh cow's milk (whole) should be avoided. It has nearly twice as much fat content and only 2/3 the sugar content of mare's milk and generally causes loose stools in foals. Low fat cow's milk (2% fat) can be substituted

for mare's milk if 20 g dextrose is added per liter. This mixture should be fed to a total volume of 10 percent of the foal's weight at one day of age and increased to 25 percent of the foals body weight from day 10 through weaning.

When bottle feeding, use of a lamb's nipple is preferred over a calf nipple, and small, frequent feedings is optimal. Very weak foals can be fed initially via nasal gastric tube (stomach tube) by a veterinarian. Foals will begin to consume solid feed within a few weeks and should have access to grain and grass or hay.

Controlling Diarrhea

A common problem with feeding orphaned foals is diarrhea. Controlling this involves manipulating the three components of a feeding program: 1) amount of milk fed per day, 2) dilution rate of the mixture, 3) number of feedings offered per day.

Amount to feed

Mares are large milkers and can produce as much as 3 percent of their body weight in milk per day. A suckling foal will consume as much as 30 pounds of milk in a 24 hour period. It has been shown foals can consume up to 25 percent of their body weight per day of a dilute milk replacer without risk of diarrhea. For example a 100 pound foal could consume 25 pounds of milk per day, or 50 cups. Foals can easily be taught to drink from a bucket at a very young age. This reduces labor needed and allows the foal to consume the milk needed.

Frequency of feedings

The number of feedings per day can affect the growth rate of an orphaned foal. The more frequently fed, the more optimal the growth rate. Foals will nurse their dams the most frequently the first week. Feeding frequency can decrease from every 1 to 2 hours the first week to every 4 to 6 hours after the second week of life. Within a few weeks of life, foals will begin solid feed consumption, allowing a fewer feedings. However, large, twice daily feedings generally produce diarrhea problems.

Dilution of milk replacer

Another important consideration is the dilution of powdered mare's milk replacer. Mare's milk contains about 10 percent dry matter (or 90% water), 2 percent protein, and 1.3 percent fat. Most milk replacers recommend a dilution rate leading to a much more concentrated milk mixture than what a foal would receive from a mare. Therefore, a much higher dilution rate (1:10), which is more similar to natural mare's milk is recommended. More diluted milk replacer solution should be fed to provide the recommended total dry matter intake.

General Care

It is essential to monitor the foal's overall health. If the mare was ill before parturition, the newborn may be malnourished. The foal should be able to stand, walk, have a suckling reflex, and nurse a bottle within two to three hours. Often times, small, weak foals may appear fine initially, but begin to deteriorate within 24 hours. If this happens, veterinarian assistance may be critical. Foal neonatal centers are available but can be extremely expensive.

As with any newborn, a dry, clean, warm environment is essential. As the foal becomes stronger, it

should be turned out into a small pasture or lot for exercise. If possible, rear the orphan with another orphan, pony, goat, or horse. Orphan foal behavior problems can be reduced if owners make every attempt to treat the foal as a horse and not as a pet.

The health care program of orphan foals must be monitored closely. All routine vaccinations and deworming must be timely for the orphan to get the greatest benefit. Foals should receive their initial vaccinations for tetanus, encephalomyelitis, influenza, and rhinopneumonitis at 60 days of age, with an additional booster four to six weeks later. Parasite control can be initiated at 60 days of age, and should be done at a minimum every eight weeks. A continuous daily dewormer is available and could bene-fit many orphans by minimizing parasite infestation.

Expected Growth Rate

Many believe that orphaned foals are "stunted" and never reach their genetic growth potential. However, if sufficient management is done, these foals can grow at an optimal rate. Recent research has shown orphaned foals, under intensive management and health care, were smaller and had a slower growth rate than foals suckling mares at 30 days of age. However, by 180 days of age, there was no difference in wither height, and only a slight difference in weight. Thus, with proper management, there should be no long term effects on mature size of foals orphaned at birth.

Formula 1 ^a	24 oz. 12 oz. 4 tsp.	cow's milk saturated lime water dextrose ^b
Formula 2	4 oz. 4 oz. 1 tsp.	evaporated milk warm water white corn syrup ^b
Formula 3	8 oz. 1 tsp.	2% cow's milk white corn syrup ^b
Formula 4	3.5 qts. 3.5 qts. 10 oz. 10 oz. 2 oz.	cow's milk water wheat flour ground malt potassium bicarbonate
^a Preferred formula		
^b Table sugar may produce diarrhea and thus should be avoided.		

Milk Replacer for Foals

Commercial milk replacer may not always be available when needed or may be too costly for some owners. Below are several recipes for home-made milk replacers.

Formulas are to be used for a short period, when commercial mare milk replacers are unavailable:

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