

HOME MANAGEMENT OF THE ORPHAN FOAL

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In addition to routine preventative care, orphan foals require careful nutritional management and socialisation.

Normal foal behaviour

Normal foals nurse from the mare very frequently in the first few days of life. This can be as frequent as every 20-30 minutes. They also consume a large volume of milk. This can be 20-25% of their bodyweight. This equates to 10 litres per day, divided into feeds of 140-200ml each. This is important information, because when we plan nutrition, we must bear in mind not only the nutritional goals but also the normal stomach capacity.

In the first few days of life, when the mare has adequate milk, the foal will often stand, urinate, nurse and then lie back down to sleep. The foal will “latch on” to the teat for a period (often up to 5 minutes). It may have a short period of running around after nursing. The foal of a mare with inadequate milk will spend more time trying to nurse and less time sleeping, until the point at which it becomes too weak to sustain this behaviour. Often what is seen is the foal attempting to nurse from the mare, becoming detached after a short period, waiting on its feet, going back in to attempt nursing again. The foal does not seem to become “latched on” to the teat for a prolonged period, but appears very keen to nurse.

Energy, protein and lipid requirements

The resting energy requirement of sick foals is 45kcal/kg/day (190kJ/kg/day). Foals being fed to meet activity levels are generally provided between 45 and 85 kcal/kg/day (190-360kJ/kg/day). A normal foal will take in 120kcal/kg/day (505kJ/kg/day).

Normal foals will consume 6.8g protein per kg bodyweight per day in the first week of life. However, traditionally nutritional formulas for foals have been based on recommendations from human infants, where 2-3g per kg bodyweight is given daily. The true minimal requirements for foals are not known.

The lipid requirements of a foal are also not known. However, most references recommend 1-3 g lipid per kg bodyweight per day. This is less than foals receive from mare's milk, where they receive 4.5g lipid daily per kg bodyweight.

Fluid requirements

Normal foals drink a large amount of milk (approximately 200ml/kg bodyweight per day). This results in a large fluid load, which must be lost by the foal. Foals therefore have very dilute urine (isothermic for the first 2 days of life, and then hyposthenuric). However, the minimal fluid requirements of the foal appear to be considerably less than the voluntary intake. We usually estimate maintenance requirements to be about 100ml/kg/day.

Feeding Milk

Obviously the ideal feed for a foal is mare's milk. In larger breeding operations and hospitals, it may be possible to obtain mare's milk and freeze it ready for use with foals where the mare is not available or has insufficient milk. About 300-500ml of milk per day can be safely taken from a mare that appears to have large quantities of milk, and whose foal appears vigorous and healthy. In the hospital, foals with diarrhoea or colic are often prevented from nursing the mare, and the milk from these mares can be stored for future patients. We clean the udder prior to milking a mare, and filter the milk obtained through a gauze swab prior to use.

If mare's milk is not available, various substitutes can be used. Goats milk appears well tolerated by foals, even though the energy density is about 30% greater than mares milk. For this reason, goats milk is often used diluted with water (2 parts goats milk to one part water). Cow's milk has too high a fat content and too low an energy to use without modification. Glucose or dextrose (but not sucrose (table sugar)) should be added to 2% fat milk, at a rate of 20 grams per litre⁴.

Commercial milk replacers are available in many countries. Often these are either identical to, or based on, milk replacers made for calves. These then often have too high fat contents and not high enough energy contents for foals. Furthermore, mixing to the manufacturers recommendations can, with some products, lead to constipation in some foals. For this reason, for the products I have used, we have added only 3/4 of the recommended amount of powder to water to make up the milk.

Methods of feeding milk

Bowl feeding

The milk is placed in a large, open bowl and the foal drinks from it free-choice. The bowl should be placed between elbow and shoulder height for the foal. Bowl feeding is preferable to bottle-feeding for a number of reasons. The main one is that it reduces the chance of aspiration pneumonia. It is also much less labour intensive, as foal does not require a person there during the time it is consuming the milk. We have found no difference in getting foals to nurse from a nurse mare that have been fed from a bowl or have been fed from a bottle.

Bottle-feeding

Bottle-feeding really requires an expert with patience, and a good bottle. It is very hard to find bottles with a rubber teat that is at all similar to a mare's teat. Commercially available bottles are usually designed for humans or calves. Often the hole in the teat is too big, and the milk can be accidentally poured into the foal's mouth and then into the foal's trachea. I have treated a large number of aspiration pneumonia cases from bottle-fed foals. One of the most common scenarios is a foal with very mild perinatal asphyxia syndrome, which is not nursing adequately. The combination of bottle-feeding and a mal coordinated suck or swallow reflex often leads to aspiration pneumonia. We do not have any bottles in my hospital.

Tube feeding

Tube feeding can be very useful for foals with poor swallow function, but a working gastrointestinal tract. Another good use is to supplement a foal that is nursing vigorously, but the mare has too little milk. It can be hard to persuade these foals to nurse from a bottle or bowl when the mare is in the stall with them, and an indwelling tube provides an easy way of supplementing milk.

Any small-bore tube of an appropriate length can be used to feed a foal. For one off feeds (for example of colostrum just after birth), I frequently use catheters designed as Stallion urinary catheters (Portex) to provide milk. For foals that will receive repeated feeds via a tube, I really like the 12Fr MILA indwelling tubes.

These tubes come with a stylet for easy placement, and are narrow bore enough and flexible enough to allow a foal to nurse past them and not cause a pharyngitis. I fix these tubes similarly to how I fix indwelling oxygen tubes in foals. They are attached to tongue depressors, which are then taped to the muzzle of the foal using elastoplast.

Feeding the orphan foal

I usually feed the orphan foal in the following manner:

Day of Life	Percent of bodyweight of milk to feed in 24 hours	Frequency of feeding	Volume of each milk feed for a 50kg foal	Notes
1	10%	Every hour	208ml	
2	20%	Every hour	417ml	
3-6	20%	Q2h	917ml	Transition to the larger volume over a few hours
7-13	20%	Q4h	1.83L	Transition to the larger volume over a few hours
14-27	20%	Q4h*	2.75L	*Skip overnight feed – can leave 8 hours between feeds overnight
28-98	15-20%	Q4h	2.75L	Add a creep feed according to the manufacturers recommendation
14 weeks (98 days)	Wean	Wean	Wean	This is about the earliest that a foal can be weaned

Note that foal will grow – the volume for a 50kg foal is only given as an aid to check calculations

Orphan foals frequently get loose faeces or diarrhoea. If the foal appears healthy and lively despite the diarrhoea, this is most likely due to bacterial overgrowth. Foals typically coprophage (eat their mare's faeces) from the age of approximately 7 days, which helps to populate their intestine with bacteria. Orphan foals can miss this vital stage of gastrointestinal development, and sometimes "trans-faunating" the orphan foal by delivering faeces from a healthy (well-wormed) animal can help digestion and solve the problem with diarrhoea.

Socialisation

In addition to feeding the orphan foal, it is also important to socialise the foal to other horses if at all possible. Foals which are exclusively hand-reared and do not have the company of other horses can become over-dependent on humans and difficult to handle as they grow.

Ideally, providing it is healthy and vigorous, an orphan foal should be turned out with another horse from about the age of 7 days. It is important to carefully select the horse to turn the foal out with, based on its temperament. Older geldings are often chosen for this purpose.

Nurse Mares

The ideal situation for an orphan foal is to find a nurse mare. In Ireland, nurse mares are commercially available but are expensive. Sometimes people will offer their mares as a nurse mare if the foal has died. In this situation, a clear agreement is necessary as to who is responsible for care, vet bills and getting the mare back in foal.

When grafting a foal onto a nurse mare, giving the mare (if she is not pregnant) a combination of 20iu of oxytocin, 10mg of dinoprost with or without 15 minutes of vaginal and cervical stimulation followed by introducing the foal can often avoid the need for blindfolds, hobbles and other forms of restraint. In my experience about 8/10 mares will immediately accept the foal when given these drugs.