



## Care of the Newborn Foal

### Foaling and the first 24 hours of life

As the breeding season approaches, owners and breeders thoughts turn to imminent foalings and future pregnancies. The normal gestation length in mares is very variable. In Thoroughbred mares, it can be from 320 - 360 days and in donkeys it can be as long as 385 days. Foals born before 320 days gestation are classed as premature. Unfortunately because there is so much variation in gestation length it can be difficult to predict foaling just from the date of covering.

Changes in the mare can be assessed to help predict imminent foaling. The majority of mares will show mammary development in the last month of pregnancy, with the most growth in the last two weeks. White flecks are often seen on the teats a few days before the mare waxes up and the mares' udder will become tender to the touch. During the final 24 hours mares will wax up, with a waxy discharge on the end of the teats (although this can be 1-4 days before birth) and the vulva will lengthen.

These are general principles but unfortunately not every mare reads the text books! Other methods to predict foaling include foaling alarms and electrolyte strips to measure the electrolyte changes in the milk.

The normal neonate will take fast, regular breaths once the amnion has broken, 60-80 breaths per minute. The foal's 'righting reflex' will kick in during the first few minutes of life and the foal will sit up into sternal recumbency allowing it to breathe more easily. During this time the mare tends to lie quietly if undisturbed, a period of quiet ensues as the mare recovers. The foal will nicker and move towards the mare and the mare should encourage the foal to do so by nickering back. The umbilical cord will break at a pre-determined site as the mare and foal move towards one another. The cord must be allowed to break in this way and not cut or torn manually as this increases the likelihood of umbilical cord problems like persistent urachus (persistence of foetal urinary anatomy), infection or hernia. Umbilical clamps are only required if there is profuse bleeding from the stump, and veterinary advice should be sought if this occurs.

The mare should stand and show an interest by nickering and cleaning the foetal fluids from the foal. This process is important in establishing the maternal bond between mare and foal and should not be disturbed. Some maiden mares may initially reject the foal. They may need to be held while the foal searches for the udder and discouraged from hurting it in these early stages.

The normal foal will be standing and searching for the udder 30-90 minutes after birth. They should be suckling 1.5 - 4hrs after birth. This must be confirmed by observing the foal latched onto the teat as some may just search in the area of the udder and not suckle properly.

**Stage 3** - This final stage of foaling is the passing of the placenta or afterbirth. This should happen between 30mins - 3hrs after foaling. If the mare doesn't pass the placenta in this time, veterinary advice should be sought. Mares that retain their placenta develop a serious infection of their uterus, they can go on to develop toxic shock and laminitis which can be fatal. It is therefore better to initiate treatment sooner rather than later.

Foaling can be split into three stages.

**Stage 1** - This can last from minutes to hours. The mare will paw the ground, pace, clamp her tail down, curl her lip in the flehmen response and flank watch. These signs are very similar to those seen in cases of colic, and as colic is not uncommon in the pregnant mare, she should be monitored closely to distinguish between the two conditions.

**Stage 2** - This is the process of foaling and should last no longer than 40 minutes. During this stage the hooves will become visible protruding from the vulval lips within a white membrane, the amnion, which is part of the placenta. One hoof will be slightly in front of the other to allow the foals shoulders to pass through the mare's pelvic canal, and the foal should then be delivered. If after the appearance of hooves at the vulva the foal has not been delivered within twenty minutes, or if the mare has been down and straining unproductively for twenty minutes with no evidence of a foal, veterinary assistance should be sought immediately. Cases of dystocia, where the foal is stuck, put both the mare and foal's lives in grave danger.

Once the foal is delivered ensure the amnion, the white sack the foal is born in, breaks and the foal's head is free and nostrils clear so it can breathe. Failure to break this membrane results in asphyxia and death. This is not uncommon in maiden mares who may have a weak mothering instinct and so not break the membrane over the foal. Once you are sure that the foal can breathe it is important to step back and allow the mare and foal time to establish a strong maternal bond.



## What can owners do during the first twenty four hours of a foal's life?

- Dip navel three times in dilute chlorhexidine or povidine iodine over the first 24 hours of life. Try not to handle the umbilical cord whilst doing this - wear gloves.
- Wipe mare's udder clean with warm water before the foal first suckles.
- Ensure foal is suckling regularly; 7-8 times per hour.
- Keep the placenta for veterinary inspection.
- Note if the meconium (black putty droppings produced during pregnancy) has been passed from the foal.
- Note if the foal has urinated normally.
- Allow peace and quiet for the mare and foal to establish a bond

Most mares will foal in the early hours of the morning and even hang on until left alone, usually just as you nip to the toilet after sitting up all night! The majority of mares will foal with no complications and require no help at all. However it is important to be able to recognise when there is a problem and take action sooner rather than later. If you are at all concerned about your foal, do not hesitate to seek veterinary advice, sick foals show vague clinical signs and deteriorate quickly. A good rule of thumb is any variation from the normal is a reason to worry and if in doubt, it is best to check with your veterinary surgeon.

## Colostrum

### What is it and why is it important?

Colostrum is a sticky yellow substance produced in the mare's udder during the last two weeks of pregnancy. It is a complete mix of electrolytes, carbohydrates, fats and proteins. The most important components of colostrum are antibodies, IgG and IgA.

The type of placenta in the horse doesn't allow the transfer of antibodies to the foetus during pregnancy. Therefore the foal is born immunologically naïve and relies completely on colostrum as a source of antibodies. Without these antibodies the foal is susceptible to infection which can be life threatening.

Colostrum is produced only once and is replaced by milk within the first twenty four hours of foaling. Any leakage of milk prior to foaling will result in reduced colostrum for the foal and so reduced antibody transfer for the foal.

Colostrum varies in quality and quantity from mare to mare. Maiden mares and mares which have had many foals produce lower quality colostrum. Colostral quality can be assessed using a number of methods. Brix refractometry measure the colostral sugar levels (good quality colostrum >20%), the specific gravity can be measured (good quality colostrum >1.065) or the IgG concentration can be determined (good quality colostrum 70g/l).

### How does the foal absorb colostrum?

Foals have specialised cells in their small intestine which actively absorb large molecules such as antibodies. The absorption of antibodies through the gut into the bloodstream from the colostrum is known as 'Passive Transfer'. However, these cells cannot distinguish antibodies from other large molecules including bacteria. This means that bacteria can enter the foal through the gut whilst these cells exist. This is why it is important that any dirt/faecal material that contains harmful bacteria should be cleaned from the mares' udder, with warm water, before the foal suckles.

These specialised cells are replaced 12-24 hours after birth so no further antibodies can be absorbed. This means that there is only a small window of time during which the foal must suckle to benefit from the colostrum. It is widely regarded that ingestion of colostrum within the first 4-6 hours of life results in the most successful passive transfer.

It is good practice to check the foal's antibody levels at 24-36 hours of age. This is routinely performed as part of the veterinary 24 hour foal check. A blood sample is taken from the foal and the levels of a specific antibody, IgG, measured using an enzyme immunoassay. This test gives results on the same day as sampling.

>8g/l = Adequate Passive Transfer

8-4 g/l = Borderline Passive Transfer

<4g/l = Failure of Passive Transfer



The foal starts to produce its own antibody at 10-14 days of age but adult levels are not achieved until 12-14 weeks. Therefore colostral immunity is especially important during this time. Colostral immunity wanes over time as the foals' own antibody levels rise.

- If colostral immunity is **good** (good quality colostrum and foal suckled regularly during the first 12hrs of life), the foal has good protection from infection.
- If colostral immunity is **moderate**, the foal is likely to be poorly protected between 2-8 weeks of age.
- If colostral immunity is **poor**, the foal is not protected until it's own antibodies reach an effective level at 8 weeks of age, and it is likely to suffer from serious problems that may be life threatening.

If failure of passive transfer has occurred, either diagnosed on blood test, if the foal is known not to have suckled or if the mare's colostrum is poor quality, action can be taken to provide the foal with antibodies to protect it in the early stages of life. If the foal is under 12 hours of age this can be done by feeding the foal good quality colostrum from another source, for example studs and veterinarians often have a bank of frozen colostrum for such emergencies. Alternatively, if diagnosed after the foal is 12 hours of age, a plasma transfusion can be performed.

An owner can try to ensure that passive transfer is successful and so the foal has good immunity to infection in early life by making sure the foal is up and suckling regularly during the first 12 hours of life. A simple blood test will confirm whether further action is needed and a plasma transfusion can be the difference between life and death.

Successful passive transfer is no substitute for practicing good hygiene with newborn foals, however it does ensure your foal is given the best start in life.