Foaling Facts

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Photos by Hermien Wierdsma

When will my mare foal?

Predicting the time your mare will foal can be very difficult. The most reliable indicator is previous gestational length in multiparous mares (mares that have already had a foal). Mares tend to carry their foals for repeatable gestational lengths. If the mare is a maiden, her gestational length can be all over the chart. In general, normal gestation for a mare ranges from 335 to 345 days. Physical changes in the mare occur during the last two weeks of gestation such as: the mare's abdomen dropping down, her paralumbar fossa (the area just in front of her hip bones) starting to hollow, and the tail head becoming prominent as the iliosacral ligaments and gluteal muscles soften. Udder development and edema in seasoned mares begins the last two to four weeks of gestation. Four to seven days prior to foaling the teats fill. By four to five day pre-foaling, a clear discharge may be expressed from teats. As parturition nears, the milk secretion becomes progressively more sticky and a rich yellow to smoky color within 24 to 48 hours prior to foaling. This is the mare's first milk that is rich in protective antibodies for the foal (colostrum). Waxing of the teats usually occurs 12 to 48 hours before foaling. Note that maiden mares may have no udder development or waxing prior to foaling.

Other more objective tests to predict foaling assess milk electrolytes concentrations (i.e. sodium, chloride, potassium, citrate, phosphate, magnesium and calcium). Most commercial tests assess primarily calcium levels in the milk. A calcium concentration of greater than 250 ppm positively predicts the probability of foaling within 24 hours accurately from 53% to 79% of the time. The variability in their accuracy is dependent on the kit and the experience of the individual reading these tests. Some of the more common test kits available include: Softcheck test strips (Environmental Test System, Elkhart, IN), Predict-a-foal mare foaling predictor kit (Animal Health Care Products, Vernon, CA), and Titrets calcium hardness test kit (Chemetric Inc, Calverton, VA)

In a normal delivery the foal's front legs will appear first, one slightly ahead of the other. The nose will appear next.

There are numerous foal alert devices. One type features a transmitter that is sutured to the mare's vulva one to two weeks prior to the expected foaling date. The transmitter is activated when the vulvar lips are physically separated by stage II labor during the foaling process. The separation sends a signal to a receiver that sounds an alarm device or a pager. These devices are not fool proof. The mare can dislodge the transmitter, so it should be checked each evening. There can also be failures of the transmitter. The bottom line is these devices are just another helpful tool, but nothing beats closely monitoring your mare. One widely used birth monitoring system is made by Foalert, Inc (Acworth, GA).

How do I prepare the foaling area and the mare?

The mare should move to the foaling area four to six weeks prior to foaling. This allows her to adjust to the foaling area. If the foaling location is on a different premises, it allows the mare time to build proper immunity to bacteria and viruses particular to that farm. She should have received a killed rhinopneumonitis vaccination (equine herpes virus) at three, five, seven and nine months of gestation. One month prior to foaling, the mare should receive a complete vaccinal booster with influenza, eastern/western equine encephalitis, and tetanus. Other vaccines may be appropriate, such as streptococcus equi, west nile virus, rabies, etc. relative to specific regional diseases. These vaccinations help insure that the mare will concentrate protective antibodies in her colostrum for the foal. Mares should also be dewormed the month prior to foaling to decrease exposure of the neonatal foal to parasite infection.

Foaling stall walls and floor should be disinfected prior to a new mare and foal going into the area. Clean straw bedding is preferable to shavings. The mare's tail, perineum and udder should be cleaned with a gentle soap (Ivory soap) and fresh water prior to foaling. Wrapping the mare's tail is also helpful. Assure the tail wrap is not applied too tightly. It is ideal to allow the mare paddock or pasture access during the day to control edema formation. The mare should be stalled in at least a 16 x 16ft foaling stall at night when she is most likely to foal. Supplies to have on hand for foaling include: clean towels to dry the foal and clean the mare; a clean bucket for washing the mare; a flashlight; a suction bulb to clear the foal's nose and mouth; a thermometer to monitor the mare's temperature (99 to 101 F) and foal's temperature (99 to 102 F) for the first three days after foaling; K-Y lubricant jelly; a Fleet enema in case the foal does not pass its meconium; a foot of umbilical tape in case of excessive hemorrhage from the umbilicus after the mare breaks the cord; a long necked 8 ounce bottle with a goat nipple if the foal needs assisted feedings; two heat lamps if the weather is inclimate; and 4 ounces of Nolvasan solution to dip the foal's umbilicus daily for the first three day of life. Numerous other items can be added, but these are the bare essentials.

What should a newborn foal do?

Clearing fetal membranes

During the birthing process, the foal should break its fetal membranes by the time it clears the birth canal. If the foal is born and unable to free itself from these membranes, it may suffocate. These membranes should be removed from the nose and mouth right away.

Righting and suckle reflexes

The foal should make efforts within the first minutes of life to right itself to a sternal position (upright position). The suckle reflex should also be evident almost immediately after birth as the foal actively protrudes its tongue and has a sucking action with its mouth.

Standing and drinking milk

Within an hour after birth, the foal should stand and within two hours suckle the mare. Check the mare's udder to insure she is making milk. If the foal is unable to stand, it may require assistance and you should contact your veterinarian. If the foal does not ingest the mare's colostrum soon after birth, it will be more prone to infection, low blood sugar, constipation, and other life-threatening complications. The colostrum can be checked to make sure it is of adequate quality to insure adequate passive transfer of antibodies to the foal. When the colostrum is checked on a colostrometer, it should have a specific gravity of at least 1.060 or higher or an IgG concentration of more than 6000mg/dl to insure an IgG antibody level of more than 800 mg/dl in the foal. Note that if the mare has dripped

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milk for longer than 24 hours prior to foaling, she is at high risk for having poor quality colostrum; thus, the colostral quality should be checked at foaling or the foal's IgG must be checked to avoid foal fatalities.

Passing fetal manure (meconium)
The foal should start to pass firm dark fetal manure called meconium within the first few hours of life. If the foal is not seen to defecate, straining to defecate, or there is no fecal staining on the rump, a veterinarian should be contacted and an enema should be administered.

Urination
Most foals should urinate by 12 hours of age (males at approximately five hours and females at approximately ten hours). If a foal strains to urinate, postures to urinate without producing urine, and/or develops a distended abdomen, it may have a defect in its bladder from the trauma of foaling, especially if it is a male. This is an emergency that requires hospitalization of the foal for medical and surgical treatment.

The navel (umbilicus)
For the first few days of life, the foal's umbilicus should be dipped in a dilute solution of 0.5% chlorohexidine (Nolvasan®), or other antiseptic recommended by your veterinarian, to prevent infection. If there are abnormal bulges (hernias, infections, etc), bleeding, pus, or urine drainage (patent urachus) from the umbilicus, call your veterinarian.

What should happen after foaling?

It is important to keep the mare and foal in a clean, dry, warm environment. Foals should be bright and alert, should suckle 5-6 times an hour, and sleep in between feedings. We recommend washing your hands before working with foals, to prevent transmission of diseases. It is important to have appropriate footing for the foal to stand because a slippery floor makes standing difficult and may predispose to injury. Occasionally, a mare will not allow a foal to suckle, if this is a problem, we recommend calling your veterinarian, as the mare may require sedation and restraint.

The mare should pass her placenta within three to four hours of foaling. Most mares pass their placenta within an hour of foaling. Mares will often demonstrate mild colic for the hour following foaling. If the colic is more than mild cramping or persists for greater than an hour, the mare should be examined by a veterinarian. If the mare has not passed her placenta in four hours post-foaling, a veterinarian should examine her. Mares with retained placentas

can succumb to severe life-threatening endotoxemia, reproductive infections (endometritis, pyometra, and sterility), and founder if not treated appropriately by a veterinarian.

The veterinarians at our clinic would also like to emphasize the problems unique to the Friesian with regard to placental retention from a study out of the Netherlands. (As reported in "The Friesian Mare and the Afterbirth", *Phryso International*, July 2001, by Mello Sevinga) This study demonstrated that 54% of 125 foaling Friesian mares held onto their placenta for longer than three hours. Comparative rates for placental retention reported in the literature for other breeds is only 5-10%. In this study, Friesian mares had significantly lower levels of calcium in their blood than mares that easily passed their afterbirth; thus, treating the mares with a combination of oxytocin (a hormone that stimulates uterine contraction) with a calcium-magnesium solution intravenously may be helpful. Calcium is essential for normal uterine contraction and placental expulsion.

Once the mare passes her placenta, save it in a bucket of cold water for your veterinarian to inspect. The placenta must be inspected closely to insure that both arms of the t-shaped placenta are present. If any part of the placenta is missing, the mare should have a complete reproductive examination by your veterinarian. At 12 to 24 hours post-foaling, the mare and foal should have a physical examination by your veterinarian. The mare will have a routine physical as well as her birth canal checked for placental retention, tears or excessive bleeding, and her udder examined for milk production and signs of infection. The foal will have a routine physical as well as special checks of the following: the palate for clefts; the eyes for congenital problems and diseases; the umbilicus for patent urachus, hernias and infection; the scrotum in males for hernias; the rectum for meconium retention. This is also the time to check that the foal has received enough antibodies from the mare's colostrum by checking blood IgG antibody concentrations. Other blood parameters such as a complete blood count and biochemical profile should be checked if the foaling was difficult or if there are any concerns about the foal. All blood parameters should be normal and the IgG greater than 800mg/dl to guard against blood infections and other complications. The administration of prophylactic antibiotics, vitamin E/selenium boosters, and tetanus anti-toxin are not necessary for all foals and should only be done when problems have been identified on the farm by your veterinarian.

Any problems that are noted in the first hours of life may progress rapidly because the foal has limited energy stores and ability to resist infection. It is essential that you contact your veterinarian as soon as possible if problems are noted.

Highlight on neonatal neurologic disease

Neurologic diseases in the foal are very important to recognize early on because many of them are life threatening if not addressed immediately. The most common cause of neurologic disease in the foal is a difficult birthing (dystocia), in-utero strangulation of the umbilical cord, or premature separation of the placenta causing an episode of oxygen deprivation (perinatal asphyxia or hypoxia) to the foal's brain. Due to the episode of oxygen deprivation other vital organs such as the kidneys, lungs and gastrointestinal tract may also be adversely affected. This disease, hypoxic-ischemic encephalopathy, has numerous names such as dummy foal syndrome, barker foals, neonatal maladjustment syndrome, etc.

Depending on the nature of the hypoxic insult, signs may show up immediately to 48 hours after birth. Foals affected at birth show signs from immediate oxygen deprivation such as inability to rise, suckle, move around the foaling area, or even may seizure. Some of these foals can be deceiving and go to the udder and look like they are suckling the mare but they are actually just mouthing or biting the udder. They are not actually drinking. They may also pace aimlessly around the foaling area looking like a strangely active foal that will not rest. These are seizure-type activities. These foals can get into serious trouble because the owners do not realize that they are not normal, so they often develop serious secondary complications from dehydration, hypoglycemia, and failure of passive transfer (blood infections and joint ill). ***You should contact your veterinarian immediately on any foal that has not successfully risen and nursed within 2 to 3 hours of birth or has had a difficult foaling.*** This is a life threatening emergency requiring intensive care, most likely in a veterinary hospital.

Foals affected several hours after birth to two days of age are experiencing reperfusion injury to the oxygen deprived area of the brain. This delayed injury is a result of the body releasing damaging inflammatory mediators in response to reestablishing blood flow to the brain. This syndrome is very frustrating because owners may start out with a normal foal that goes bad. Thus, for the first three to four days of life, owners should regularly check and make sure

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the foal is getting around well, rectal temperature is between 99 and 102, and the foal is suckling well (i.e. assure the mare's udder is not dripping milk or extremely full and the foal has lots of energy). The take home message is this: ***Any abnormal behavior, fever, depression, diarrhea, etc. in a foal less than 10 days of age is an emergency that must be seen by your veterinarian immediately.*** Foals have limited immune protection and energy reserves, so within a period of hours they can die from illnesses if ICU care is not instituted right away.

Time is essential

The faster an ill foal is hospitalized the better its chances for survival. Even a few hours can make a big difference. If transportation of the mare will delay transport of the foal, the foal may be transported in the cab of a truck and the mare transported later. It is important to check with your veterinarian first, because the foal may need to be stabilized prior to transport, and the mare may require sedation to facilitate the separation process. If you ever have a question about the health care of a foal, call your veterinarian immediately. ***Never let the sun set on a sick foal.***

Resources

Information about foaling may be obtained through textbooks, such as *Blessed are the Foals*, 2nd edition by Dr. Phyllis Lose; through periodicals like *The Horse* and *Equus;* through videos such as *Foaling* by the Blood Horse, Inc. (Lexington, KY); or from the internet at sites such as www.agcom.purdue.edu/AgCom/Pubs/AS/AS-488.html,

HAPPY START

I would like to wish everyone a happy and uneventful foaling season. I have outlined many of the normal things a foal and mare should do as well as disasters that can occur. **I want to emphasize that the majority of mares foal out without any complications, so do not panic.** The key to a successful foaling is to be prepared, conscientious, and observant and you will have a happy start to your foal's life.