



Now that your mare is pregnant the goal is to keep her healthy through pregnancy and then deliver a normal vigorous foal. This fact sheet is designed to help you through that process.

BIOSECURITY

Ideally mares are kept in small groups with others at a similar stage of pregnancy. Mares that are long-term residents on the farm are kept separate to outside mares. All pregnant mares are isolated from horses likely to be shedding infectious organisms; these include weanlings and yearlings, young horses in training, and horses in the show or performance string. Mares that have recently been bred are also an infection risk to pregnant mares. Separation ideally means a separate barn, and no sharing of feed or water sources.

PREGNANCY EXAMS AND NORMAL LOSS RATES

Following breeding, the first pregnancy exam is usually performed by ultrasound at 14-16 days. This is an important exam because it is the best time to correct a twin pregnancy and also allows you to begin planning the rebreeding if the mare is not pregnant.

Occasionally an exam is done at day 24-25 of pregnancy to find the embryonic heartbeat, but the next important one takes place at around 30-35 days. If the mare has lost the embryo before this time she can usually be re-bred successfully; but if she is pregnant at 35 days and then aborts, she is not fertile for another 3-4 months due to formation of the endometrial cups in the uterus. These structures, which come from the embryo and implant into the uterus, do not die even if the pregnancy aborts until around 120 days after mating. This usually means that the breeding season is over for that mare.

A further exam to confirm that the mare is still pregnant can be done in the fall. In addition to these, other pregnancy exams may be performed if they are mandated by your breeding or insurance contract, the mare has a history of embryonic loss or abortion, the mare fails to gain weight and look pregnant when she should in late pregnancy, and/or she shows signs of aborting.

On average, a young mare pregnant at 14-16 days has approximately a 6% chance of losing her embryo by day 40, and an 8% chance of aborting after day 40. The expected loss rate increases progressively with age and for a 20 year-old mare losses are 21% at day 40, and 15% after day 40.

NUTRITION

Mares should enter the breeding season in moderate to fleshy condition (body condition score of 5-6 on a 1-9 scale) and be fed to maintain that level throughout pregnancy and lactation. The fetus does most of its growing towards the end of gestation and a mare can be expected to gain 9-12% of her body weight during pregnancy, with 2/3 of this coming in the last 3 months. During the first 8 months of pregnancy the mares' nutrition requirements are no different to those before she conceived. In the last trimester, the mares requirements for protein, calcium, sugars and phosphorus increase faster than the need for energy, and may require supplementation. Free access to high quality grass or alfalfa, either grazed or cut for hay at an early growth stage, will meet energy requirements and usually those for protein (which have gone from 8% earlier in pregnancy up to 11-12% now). However, neither of these forages will meet her increased need for phosphorus and grass forages will also be too low in calcium. To correct this,

mares should receive a daily salt-calcium-phosphorus mineral mix supplement, and these can be purchased tailored to the type of forage she is getting.

It is essential that both vitamins and trace minerals are supplemented as well. For example, copper, zinc, manganese, and iron must be stored in the fetal liver. Research indicates that when mares were not supplemented copper in the last trimester, the foals were not as sound compared to foals born to copper supplemented mares. Feeding supplemental copper to the nursing foals did not correct the problems. Supplementation of natural vitamin E in the 30 days before foaling can also increase the passive transfer of antibodies to the foal.

Once lactation starts, the mare's energy and protein needs increase further. Very good quality forage with a mineral supplement can meet these needs, but most mares should receive a grain/protein mix in addition, fed at around ½-1 lb per 100 lbs of body weight/day. This is also the time most mares are re-breed, and fertility is best when the mare is not losing condition. After 3 months of lactation, a mare's milk production is usually declining, start slowly decreasing her grain before weaning to help dry the mare up.

EXERCISE

Provided you have been given no specific advice against it (usually in cases of lameness or injury) most mares benefit from exercise during pregnancy. Many mares have been used for rigorous athletic competition (including racing and jumping) up to 5 months with no problems. Light trail riding can continue until the start of the last month of pregnancy in many cases, though you may need to find a saddle that matches her new shape. Mares that aren't ridden benefit from as much turnout as possible, preferable a minimum of 6 hours a day when conditions allow.

DEWORMING AND VACCINATIONS

Internal parasite control relies on a combination of pasture management, manure disposal and strategic use of dewormers. Most modern dewormers are safe for use in pregnant mares, but always check the label first. Mares generally remain on

the same deworming schedule as other mature horses on the farm. It is now commonly recommended that mares also be given a dose of ivermectin on the day of birth to help prevent transmission of worms to the foal.

Vaccination of the broodmare has 3 aims; protect the mare from disease, prevent abortion, and protect the foal by passive transfer of immunity through colostrum. It is recommended that vaccines are not given to mares in the first 60 days of pregnancy. Ideally mares have completed their primary course of vaccination before becoming pregnant. To ensure maximal protection of the newborn foal, pregnant mares are vaccinated for most diseases in the last 3-6 weeks of pregnancy.

All broodmares in this region should be vaccinated against tetanus, equine herpes virus-1 (EHV-1), Eastern and Western encephalomyelitis (EEE+WEE, also known as sleeping sickness) and West Nile virus (WNV) at this time. Fortunately, the last month of pregnancy usually coincides with the best time to give spring boosters for EEE, WEE and WNV. Most pregnant mares are also vaccinated against influenza, HV-4 and herpes virus abortion at 5, 7 and 9 months of gestation, with some farms giving an additional dose at 3 months. A WNV booster is administered in late summer for protection of the mare during the Fall. Due to the number of diseases involved, your veterinarian may recommend splitting up the pre-foaling vaccines, giving half 6 weeks and half 3 weeks before foaling is expected. Other vaccines include those against rabies, strangles, rotavirus, and Potomac horse fever. Your vet can advise you on which are likely to be beneficial in your situation and when they are best administered.

TRANSPORT

When it comes to transporting your broodmare, things to consider are: how far along in pregnancy is the mare, how long is the trip, what is the weather, how good are the vehicle and person doing the trailering, and how well the mare travels. The trailer should have been cleaned and disinfected between trips, be well ventilated, have good shock absorption, be driven smoothly, and the route and timing planned

to avoid heavy traffic. For longer trips some form of absorbent bedding is provided along with water and your own hay. Stops are generally scheduled every 5-8 hours.

Research has shown that transport (9 hours in pleasant temperatures) does not increase the rate of embryonic loss for mares trailered in early pregnancy (16-38 days). In late pregnancy, most recommendations are that any significant transport is done at least 30 days before she is due to foal. This dovetails with the recommendation to have the mare at her foaling site by 4-6 weeks before her due date so she can settle in and develop immunity to local organisms.

SIGNS OF APPROACHING FOALING

The length of a normal pregnancy is usually 335-342 days, but occasionally can range from as little as 315 to over 400 days. About a month before foaling many mares start to develop edema low down on their abdomen. At about the same time the udder slowly starts to enlarge and this development accelerates at 2 weeks before term. During this early development the udder remains firm. A few days before foaling, the udder gradually softens and fills with fluid which slowly changes in appearance from watery, to thick colostrum. The colostrum is generally present 1-2 days before birth.

Softening of the pelvic ligaments is progressing during this stage and the mare's tailhead may appear more elevated. Wicks of dried mammary secretion (waxing) usually appear about 1 day before birth and in the last few hours some mares will drip milk. The average mare produces about 2½-5 liters of colostrum.

PREPARATION FOR FOALING

The mare can foal in a grassy paddock or large well-bedded stall. The stall should have been stripped out, disinfected and re-bedded. Clean straw is generally preferred as foaling bedding as there is less chance the foal will breathe it in. Maiden mares can be accustomed to having their udder handled over the last week of two prior to foaling.

When foaling is imminent, the mare should have the area around her vulva, inner thighs and udder washed, or given a whole-body bath. Her tail should be wrapped.

Things you want to have available are:

- Phone and numbers for your vet and a close neighbor who is experienced at foaling
- A clock or watch, notepad and pencil so you can keep track of the timing (estimating time accurately during and after a foaling can be tricky)
- Old clean towels for drying off the foal
- Disinfectant and small cup to hold it in while you dip the navel (your vet can help with an appropriate solution)
- Bucket, soap and warm water for clean-up
- Strong trash bag for the placenta
- Plastic or rubber gloves to keep your hands clean

MAKING SURE YOU'RE THERE

Most mares foal late at night. Apart from monitoring the changes in her udder, appearance of the milk and presence of waxing, you can test the calcium content of the milk with kits. While not foolproof, these kits do give a reasonably good idea of which night a mare might foal. Results are more accurate when tests are done on milk samples taken in the evening. Foaling monitors are also available that will send a signal to a pager or phone. Again, while not foolproof, these do provide an extra layer of insurance.

NORMAL FOALING

Foaling is usually divided into 3 stages. In the first stage the cervix gradually relaxes and the uterus starts to contract, pushing the placenta, foal and fluids against the cervix to help it dilate. This stage lasts 1-6 hours and sometimes goes unnoticed. Mares may appear mildly colicky, look at their flank, stretch out, urinate and pass manure frequently and lie down repeatedly. This may coincide with dripping of milk. At the end of this stage the mare's water breaks.

Stage 2 is delivery of the foal. Usually this occurs with the mare lying on her side, though she may stand and lie

down again several times during the process, especially before the head is delivered. The mare actively strains, usually in series of 3 or 4 followed by a short rest. Within about 10 minutes of her water breaking, a whitish translucent fluid filled balloon (the amnion) should appear. Next, encased in this membrane, a foot appears. The soles of the feet should point to the mare's feet (i.e. the foal is the same way up as the mare). It is normal for the legs to protrude further as the mare strains and then slide back when she relaxes. This gradual movement is important for proper dilation of the birth canal. Resist the urge to immediately grab the legs and pull when they appear as this can result in damage to the cervix and vagina that may affect the future fertility of the mare.

The nose should appear next, lying on top of the legs. Passage of the head often takes a little longer in maiden mares as the vagina stretches over the poll. Allow time for dilation to occur. At this point the widest part of the foal, its chest, is entering the birth canal and the mare often strains harder. It is important that the feet do remain one in front of the other rather than even as this configuration minimizes the width of the shoulders, making them much easier for the mare to pass. Once the chest is out the rest of the foal usually passes easily, and the mare often stops straining. Unless the mare is kicking at the foal they should be left alone. The mare generally rolls onto her chest and stands within 15 minutes and the umbilical cord breaks 1-2 inches from the foal's abdomen. With normal, vigorous foals the amnion or water bag usually ruptures by the time the chest is passing so the foal can breathe. If it doesn't it should be torn open and cleared away from the head.

The third stage of labor is passage of the placenta which usually occurs within 1 hour after the foal is born. The mare may be slightly crampy while this is occurring. The placenta should be saved so it can be checked for completeness and for any signs of infection.

WHEN TO CALL FOR HELP - SIGNS OF A PROBLEM

From the time the water breaks to completed delivery usually takes about 20 minutes, though occasionally may be extended to 1 hour. Experience is the best guide to potential problems, but a few rules of thumb are presented below. In general, any time reasonable progress is not being made, there could be a problem and it is better to call for help rather than wait and see. Time is of the essence if we are to get a normal foal. Call your veterinarian immediately if:

- the amnion or a foot has not appeared in about 10 minutes after the water breaks
- only one foot appears and isn't followed by the other
- the feet are upside down
- the nose appears first
- one or both feet are over the top of the head

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