Equine Reproduction - From Conception to Birth

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Equine reproduction costs money: Feed, electricity, labor, water bills, barns, employees, stud fees, transportation and veterinary bills. To maximize your reproductive dollar, you have to decide what the goal of your reproductive program is. Is it to breed performance, show or pleasure horses?

Horse embryos are not more fragile than other species'; it's primarily that horses, in general, have poor reproductive performance (ability to maintain a conceptus). There are many causes of early embryonic loss. Stress, fever, uterine infections, hormone abnormalities and twins can all cause a mare to spontaneously abort.

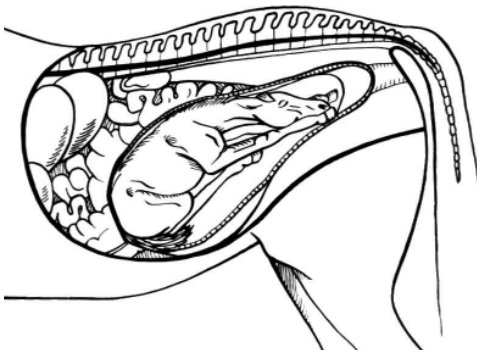
The egg is fertilized in the fallopian tubes and does not enter the uterus until it about Day 6 of gestation. This is important to remember since you can manipulate the uterine environment up until this stage. Once the embryo descends into the uterus, it has to traverse the entire uterus to be recognized by the mare. If the embryo does not touch all portions of the uterus by day 16 of gestation, the mare will reject the embryo, and begin showing signs of estrus to begin the next "heat" cycle. If the mare does recognize the presence of the embryo, then the embryo will attach itself to the wall of the uterus on or about Day 17.

Your veterinarian can perform transrectal ultrasound as soon as Day 26 of gestation to visualize a heartbeat and confirm fetal viability.

Before ultrasound was so widely available, many people relied on the fact that most mares will come back into heat 17 to 20 days after breeding if they have not conceived. In some regions, veterinarians could use a sterile speculum to see if the cervix was tightly closed (indicating pregnancy) or relaxing (indicating the beginning of another heat cycle). Experienced equine veterinarians can feel a mechanical bulge in a mare's uterus by Day 30 to 35 of gestation.

Typical intervals for checking mares are:

- Day 14 to 16 – confirms initial pregnancy and looks for twins.
- Day 26 to 30 – confirms heartbeat and fact that fetus is alive.
- Day 45 – elective examination that has no specific reason since endometrial cups



should already be formed by this time. If the mare aborts her pregnancy around Day 40-45 or after, it is unlikely she can get pregnant again the same breeding season anyway.

- Day 60 – elective examination that has no specific reason, but has become more important since the advent of fetal sexing.

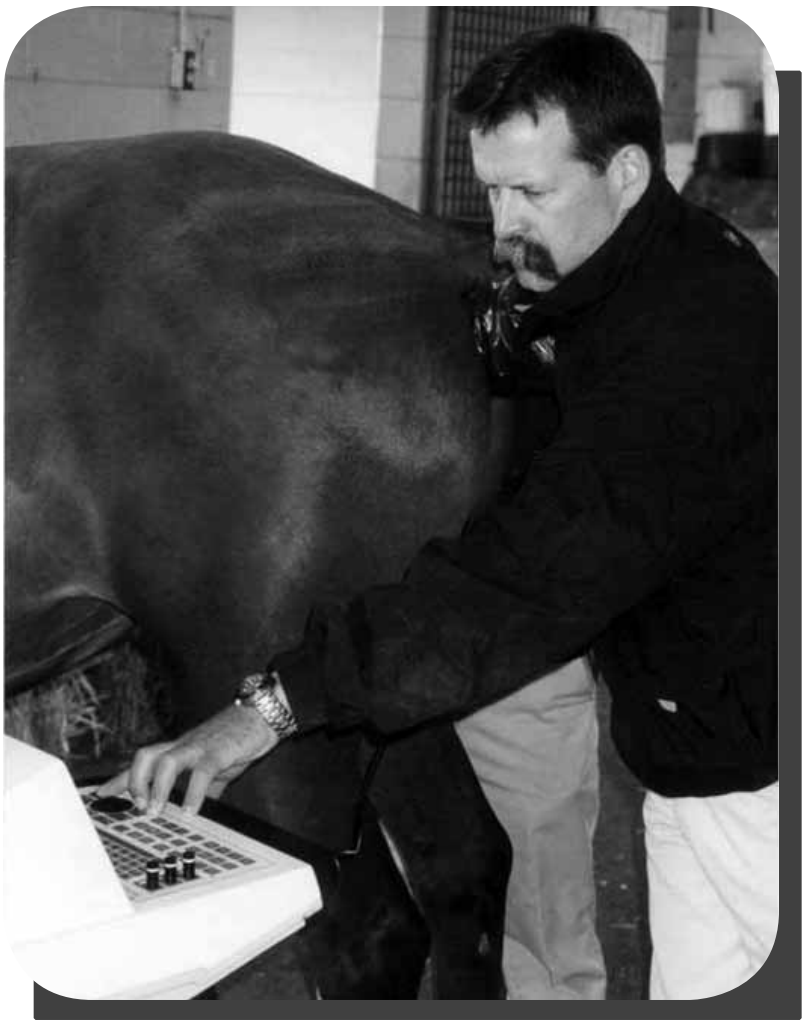
Twins are more common in thoroughbreds (25 to 35% of all conceptions). They are uncommon in quarter horses (5 to 10%). All horses should be examined for twins with transrectal ultrasound, pictured here. This author prefers to check mares on Day 15 or 16 since the twin should be 14 or 15 days old. If you consistently check mares at Day 14, at some point you will miss a younger twin that is 12 or 13 days old and too small to be visualized. Regardless of what day of gestation you check for twins, it is much easier to reduce a twin before they become fixed at Day 17 of gestation. Reducing twins is also called "crushing" a twin. This has only been possible since the advent of ultrasound. Before this time, veterinarians and owners often didn't know until the mare aborted. The smaller twin is usually crushed. The mare is typically examined 48 to 72 hours after the procedure to confirm that the remaining embryo survived.

Almost all (>90%) of twins are aborted. Almost all die. There is a limited amount of room in the uterus. If twins do survive, they are usually weak and/or non-viable.

Fetal sexing is a revolution in the reproductive industry that had been perfected in cattle but only became available in the equine industry approximately 10 years ago. Starting on Day 58 of gestation, the genital tubercle will migrate towards the tail to become the clitoris OR will migrate towards the prepuce to become the penis. You can fetal sex between Days 60 to 70 or between Days 110 to 140. Fetal sexing is virtually impossible between Days 80 to 90 and after Day 140.

BEING A MOTHER IS AN ATHLETIC EVENT

Athletic horses have the best reproductive organ conformation and do not require sacrificing calories to stay alive. They can dedicate all necessary energy to cycling correctly and maintaining a pregnancy. Avoid transporting your mare unnecessarily. Make sure she is quarantined from new arrivals. There is no need to supplement a mare's diet until she begins lactation.



Obese mares have difficult times trying to expel a fetus. Drug companies rarely spend the $$ trying to get their product "approved for use on pregnant mares." The commonly found deworming medications Pyrantel Pamoate (Strongid ®), Ivermectin, and fenbendazole (Panacur ®) are all commonly used on pregnant mares without any more side-effects than would be seen on a non-pregnant mare.

Pasture turn out provides all the neces-sary exercise and a regular diet should main-tain a mare in the correct body condition even if she is in mid-gestation. Water supply is critical because of the increased fetal fluids and milk production. Be mindful of automatic water supplies and ice-covered troughs during the winter months.

Herpesvirus (EHV-1) can cause late-term abortion and mares should be vaccinated for this disease preferably at five, seven, and nine months of gestation.

Thirty days prior to foaling:

- Caslick's procedures (when the vulva is sewn partially closed) should be opened or the patency of the vulvar lips should be confirmed.
- All vaccinations should be administered to the mare protecting against diseases for which you would like the foal to be vaccinated. Vaccinations given to the mare at foaling DO NOT PROTECT the foal since the colostrum does not have adequate time to manufacture the correct antibodies.
- Ascarid larvae can be passed in the milk so the mare should be dewormed with a product containing ivermectin. Ascarid impaction was a common cause of colic and death in foals before the use of ivermectin became common.
- Neonatal Isoerythrolysis (NI) screens are done within two weeks of foaling. These are blood tests to determine if the mare has hypersensitized herself to the blood-type of the foal. Older mares are more prone to being hypersensitized to a foal's blood-type. If the mare is NI (+), the foal must be muzzled for the first 24 to 36 hours of life, and a colostrum donor must be sought.

Normal mares have a broad range of gestation. It is very normal for mares to carry a fetus for 320 to 380 days. In general 330 days (11 months) is the most commonly cited gestation length. The most common question I get is "how long do I wait before I get worried." Fescue toxicity is the most common thing that can cause prolonged gestation and reduced milk production, but by the due date, it is too late to restrict the fescue grazing of the mare since it usually requires 60 to 90 days of restricted grazing to make a difference.

If it appeases owners, I usually ultra-sound for placental thickness or palpate for fetal movement. I have never found a dead fetus at term after an owner has been concerned about a prolonged gestation.

Although induced labor is possible and has been done in research or controlled settings, I NEVER recommend this option. There are many very experienced and well-educated veterinarians that regularly have experienced horrible side effects and death of both the mare and foal. There is never a reason to induce abortion unless the health of the mare is in danger. In my opinion, convenience of the owner is a very poor reason to induce labor when considering the danger. I experienced the two years of Mare Reproductive Loss Syndrome (MRLS) in Lexington and never saw a fetus that benefited from induced foaling. Foals can survive, but an ICU facility needs to be available with trained critical care veterinarians and support technicians.

If mares do spontaneously abort, the fetal membranes as well as the fetus need to be refrigerated or preserved for necropsy, histopathology, or for examination by your veterinarian.

Vaginal discharge or dripping milk may indicate impending abortion or foaling. It is the most common scenario to see a mare abort without any clinical signs of being sick herself.

- The udder will usually fill 2 to 4 weeks before foaling.
- The teats will usually distend 4 to 6 days before foaling.
- "Wax" will appear on the teats 1 to 4 days before foaling.

There are commercial kits that can check for the increase of calcium in udder secretions. This can also be accomplished by water-hardness test strips. Calcium increases usually happen 24 to 48 hours before foaling occurs.

Relaxed appearance of the vulva and movements in the flank "of the foal kicking" are inconclusive and should not be trusted. Minimize stresses and observation since the mare has been shown somewhat of an ability to govern her labor.

"The fetus determines the day of delivery and the mare determines the hour."

Outdoor foaling arrangements have been used for centuries. Foaling stalls should be at least 14 feet X 14 feet or larger. Disinfect floor between deliveries. Straw is the best surface. Shavings stick to eye and may cause corneal ulceration in the neonate.

FIRST STAGE LABOR:

Most (>85%) of mares foal at night. This is thought to be a survival adaptation since the foal should be ready to run with the mare by daylight. Mare is anxious. Kicks at belly. May make nesting behavior. May be mistaken for colic with continuous up and down movement and excessive urination. Many mares will sweat within an hour of giving birth... "Mare is heating up." Wrap tail and clean perineal area. This stage usually lasts about an hour. When the chorioallantois breaks and you see a rush of fluid…Stage I is over.

SECOND STAGE LABOR:

Usually 15 to 25 minutes. It may be wise to start a stopwatch since many people will lose track of time due to the excitement of the moment. Expect to see continuous progress with front hooves, nose, ears, etc.
Red bag appearance = EMERGENCY.
YOU DO NOT HAVE TIME TO CALL A VET OR EVEN DIAL THE PHONE. THIS MUST BE CUT AND THE FOAL DELIVERED IMMEDIATELY.

Caudal presentation vs. "breech delivery"

Make sure foal is breathing. Stimulate with a blunt object in nostrils. Rub vigorously with a towel.

When foal is born, do NOT cut the cord like they do in humans. Some researchers believe that a certain amount of blood flows into the foal after birth through the umbilical artery. Disinfection should be performed with CHLORHEXADINE > IODINE.

THIRD STAGE LABOR:

If the placenta is not passed within three hours it should be considered an emergency.

ONE, TWO, THREE RULE

Foal should stand in ONE hour. Should show ability to nurse by TWO hours.

(Placenta is also usually passed by this time as well.) Foal should be actively consuming colostrums by THREE hours.

Foals should be administered an enema (or two) to aid in the passage of the meconium. Meconium impaction is the most common form of colic in a newborn foal. Harvest colostrum from the mare if the foal does not aggressively consume it. You can always have your veterinarian administer colostrum via a nasogastric tube. If milking the mare, you should attempt to get 16 to 32 ounces of colostrum from the udder.

Eighty to 85 percent of colostrum absorption is in the first 8 to 12 hours of life. Get in the practice of pulling blood for IGG 6 to 8 hours after foaling and you should have adequate IGG to test and you will also have 3 to 4 hours remaining with which to administer colostrum via a nasogastric tube if required.

Mares usually require no post-partum care. Phenylbutazone (Bute ®) or flunixin meglamine (Banamine ®) may be required to reduce swelling in their vulva or rectum. Before you call your veterinarian about a sick mare that has recently had a foal, take her temperature BEFORE YOU ADMINISTER ANY DRUGS. Bute ® and Banamine ® will reduce fevers so take a rectal temperature before you artificially reduce the mare's fever. It should be under 101.5° F. Retained placenta or endometritis is common in febrile mares immediately after foaling. Mares are prone to colonic displacement after foaling and can also rupture their cecum or bladder DURING foaling.

It is normal in many foals to have fetlocks that are so weak they may be touching the ground. These will usually rectify themselves with age and exercise and require no bandages or splints. Fractured ribs are common in thoroughbreds but not in other breeds. Contracted legs or deviations in legs that prohibit nursing should be dealt with immediately by your veterinarian.

Most foals are designed to be turned out with the mare the morning after foaling. Stall restriction is not necessary for any reason other than if the foal has orthopedic concerns where movement and exercise must be limited.