

Puberty in Equine

The Mare

Fillies usually attain sexual maturity at 12 to 15 months of age, but some reach puberty as early as 9 to 10 months and others as late as 18 months. Estrus, or heat, which is the period of the reproductive cycle when the mare ovulates and can conceive, is governed by rather complex hormonal effects.



The mature mare

When the mare reaches puberty, the pituitary gland releases the hormone FSH (follicle-stimulating hormone) which causes egg follicles within the ovary to grow and produce increasing amounts of estrogen. This estrogen prepares the reproductive tract for mating and fertilization and is also responsible for behavioral changes. When the egg follicle approaches maturity, the pituitary releases a second hormone, LH (lutinizing hormone) that causes the follicle to ovulate. This usually occurs about 24 hours before the end of heat.

The Stallion:

Although most stallions begin to produce sperm as early as 12 to 14 months, most are at least 15 months or older before they can successfully breed. Few stallions are used at stud before two years of age and most stallions acquire full reproductive capacity at around three years of age.

This is not to say that a younger stallion is incapable of breeding earlier than an age of 12 months, and care must be taken to separate young stallions from fillies or mares before they reach sexual maturity to prevent unwanted pregnancies



A young stallion

stallion has two testicles enclosed by the scrotum and located in the prepubic area. The testicles produce the sperm and also the male hormone testosterone. The scrotum protects and regulates the temperature of the testes which are usually several degrees cooler than the stallion's body temperature because higher temperatures decrease spermatozoa production.

In a two to three year old stallion, the scrotal width is smaller than in a full grown stallion and the daily sperm output is smaller with fewer reserves. For this reason most stallions under three years of age are considered sexually immature.

Management of the Mare's Estrous Period

Breeding managers are generally concerned with four aspects of reproductive management during the ovulatory period—detection of estrus, mating management, pregnancy determination, and estrous cycle manipulation.



Detection of Estrus

Palpation and teasing are the two most common management tools used in the detection of heat. Rectal palpation and ultrasonography will help define the time of ovulation, and thus aid in mating management. Parameters of follicular size, follicular consistency, cervical size and consistency, and uterine tone can be monitored through rectal palpation. A mare with a large, very soft follicle that has an open cervix is a prime candidate for breeding. On the other hand, a mare that has no or very small turgid follicles and a closed cervix would be a poor candidate for breeding. Most managers use a combination of teasing and palpation for estrus detection and breeding determination. Mares are teased and those showing signs of estrus are palpated to better define reproductive status. Mares can be individually teased or placed in teasing pens which are constructed to allow for group teasing. Most farms utilize some form of teasing code for record keeping which defines mare receptivity to a teaser stallion. The behavioral signs of estrus include winking of the vulva, urination, squatting, and seeking the stallion. Increasingly, ultrasonography is being utilized for estrus detection and determination of ovulation. With real-time ultrasonography, veterinarians can determine follicular size, early ovulation, uterine changes characteristic of estrus, and abnormalities of the reproductive tract. Ultrasonography is a significant contributor to reduction of the number of breedings or inseminations required per estrus. Each mare responds and acts differently during estrus. Thus, day to day monitoring of teasing status and reproductive tract parameters is essential.



Palpation

Factors That Can Affect the Mare's Expression of Estrus

Mares with Foals

Mares may be protective of the foal and not exhibit estrus. It may require teasing the mare outside the stall away from the foal (the mare may show signs of estrus after the stallion leaves).

Maiden Mares

Mares that have never been teased before will require additional time to become familiar with the process. In some situations with maiden mares, you may need to lead the mare to the teasing area in order for the mare to learn the process.

Timid Mares

Some mares may not show estrus when being actively teased by the stallion but may do so as the stallion moves away. In a stall or pen teasing situation, these mares may show strong signs of estrus when the stallion is teasing the mares before or after them.

Weather or Other Environmental Conditions

Hot or cold temperatures, wind, or precipitation may reduce signs of estrus. Also, the presence of insects may distract a mare and keep her from expressing true estrous behavior.

Stage of Breeding Season

Early in the breeding season, some mares may not exhibit signs of estrus as readily as later in the breeding season.

Signs of pregnancy in horse

The early signs of horse pregnancy are not much different than those of other mammals, specifically humans, except that she cannot tell you what is happening. So, you will need to keep your eyes peeled for these six signs of pregnancy in a horse.

- **Refusal to Conceive:** Though not an exact science, one of the easiest ways that might indicate your mare is in foal is to take her back to a stallion approximately two weeks after the covering. If she raises her tail and presents her hindquarters as she would in heat, she is likely not pregnant. Though refusal to be sired is not a guarantee that she is in foal, most pregnant mares will refuse the advances of a stallion if she has already conceived.
- **No Signs of Heat:** Similar to the above, if your mare displays the signs of being in heat she is most likely not pregnant. Signs your mare is in heat include carrying her tail up and squealing when in contact with geldings or stallions. However, this once again does not guarantee she is in foal. Mares will only be in heat during the breeding seasons of spring and summer. In addition, she may experience what is known as a silent heat during which she ovulates as normal but will not stand for a stallion to cover her.
- **Visible Stomach:** Much like humans, the most obvious sign of a pregnant mare is a swollen abdomen. While this is a good indication of pregnancy, some horses may not develop an overly large belly or it may not be noticeable until well into her 11-month gestation.
- **Limited Movement:** Though likely an old myth, and definitely not a reliable way to confirm a mare's pregnancy, is the notion that a mare will only shake her head and neck when carrying rather than her body to protect the unborn foal.
- **Rectal Examination:** A veterinarian can detect a pregnancy by performing a rectal examination. This procedure can take place as soon as three weeks after the mare's covering and will consist of the vet inserting his hand into her rectum in

order to palpate the uterus, assess its size and shape, while also feeling for any swelling of the ovaries.

- **Ultrasound:** The only true method to be certain of your mare's successful covering is to have a veterinarian perform an ultrasound. This can be done as early as 16 days into the pregnancy which will detect a heartbeat, though it is more often done around 55 to 70 days in an effort to determine the foal's sex.



If your mare is, in fact pregnant, you will need to work to provide appropriate care for her during the gestation. First, you will need to ensure she is receiving proper nutrition to support the pregnancy. If she was in good body condition prior to the pregnancy, you should not need to worry about her calorie intake until about month eight or nine of the gestation. At that point, the foal will start to gain weight rapidly requiring your pregnant mare to consume at least 20% more calories as well as additional protein, calcium, and phosphorus.

Secondly, you should review the mare's vaccinations and ensure she is keeping up with her routine vaccination and booster schedule. In addition, your horse should be vaccinated against Equine Herpes Virus at the start of the fifth, seventh, and ninth months of mare gestation to prevent miscarriage due to infection.

Finally, you will need to be adequately prepared for the foaling, or birth, when it happens. Prior to the foal's arrival, make sure that you have appropriate shelter and fencing surrounding the horse so as you don't expose the new foal to any dangers. The foaling stall should also be bedded with plenty of straw. When ready, the foal

Asist. Prof. Dr. Measem Hassan Ali

Animal management

First stage

will present itself front feet first, with the nose appearing between the two feet. The delivery should last only about 30 minutes. Afterward, the foal should be standing within two hours and nursing within three. If this is not the case, your veterinarian should be contacted immediately to provide further care to the foal.