

Tacoma Equine Hospital

3112 – 156th Street E. Tacoma, WA 98446 ♦ 253.535.6999

Reproduction

With winter waning, the days are slowly getting longer and, before we know, it spring will be here. For those of us interested in Equine Reproduction, spring is an especially exciting time as our open mares begin to come into heat and those lucky pregnant mares grow close to foaling.

Horses are classified as seasonally polyestrous, meaning that they have multiple estrus, or heat, cycles when they are receptive to the stallion, ovulate and can conceive. The seasonal prefix refers to the fact that mares are hormonally wired to ovulate and conceive in the spring so that the resulting foals will be born during times of favorable environmental conditions. As day length increases, the eye perceives these changes and the horse's brain reacts by decreasing the level of a hormone called Melatonin. This decrease in Melatonin causes a subsequent increase in the Gonadotropin-Releasing Hormone (GnRH), which is produced by a tiny gland imbedded in the horse's brain, the Hypothalamus. As GnRH levels increase, the Pituitary Gland is stimulated to release Follicle Stimulating Hormone (FSH). This hormone causes follicle development on the mare's ovaries. The follicles produce Estrogen, which is responsible for the behavioral changes we see and label "being in heat".

If you are planning on breeding your mare it is best to contact your Veterinarian in late winter so you can work together to formulate a schedule. Part of this process is to ensure overall health and especially the reproductive health of your mare.

A good physical exam will determine the nutritional status, dental and overall health of your horse and a transrectal Ultrasound can tell us the soundness of the ovaries, cervix and uterus. Unfortunately, the primary cause of infertility in the horse is due to uterine abnormalities in the mare, especially subclinical infections. Your mare can look and act completely normal but still harbor a uterine infection that can lower her chance at conceiving and delivering a healthy foal. It is for this reason that it is mandatory that a good culture be taken of your mare's uterus prior to breeding. The result will only be accurate if taken while the mare is in heat.

Once your mare is declared sound for breeding and a stallion is chosen, the process can begin. Employing serial rectal palpations and/or transrectal ultrasonography, combined with a sound teasing program, your Veterinarian can determine when best to inseminate or recommend natural service. As a rule, each cycle your mare goes through will last 21 days. Under the influence of Estrogens being produced by growing follicles the mare will show behavioral signs of estrus or heat: vulva reversion (winking), tail-raising, squatting, frequent urination, fence pushing, etc. This period will last 5-8 days and will be quite obvious in some mares and almost undetectable in others. Towards the end of this five to eight day "heat" period, the growing follicle will rupture and the tiny Ovum or egg will be released into the Oviduct where fertilization, hopefully, will occur. The ruptured follicle is replaced by a structure called a Corpus Luteum, which will produce Progesterone. If the mare does not conceive the uterus will secrete a substance called prostaglandin, which will destroy the Corpus Luteum, lowering progesterone levels, and allow the horse to begin follicular growth again for another possible breeding.

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Hopefully your mare will conceive and 5 to 6 days after fertilization the small embryo will reach the uterus, suppressing the release of prostaglandin. The ovarian Corpus Luteum will survive and continue to produce progesterone, the hormone that maintains pregnancy.

The Veterinarian's job is to a) ensure your mare is healthy and sound to breed; b) to ensure the stallion semen used is viable and motile; c) to time insemination or breeding as close to but prior to ovulation; d) to make the process as safe, sterile and least traumatic as possible; and e) to make sure that the embryo is healthy and growing normally without ultrasonic evidence of twins.

Although, this may sound relatively easy, several factors can impede or delay conception. Below are just a few things that can lower conception rate in the horse:

1. Variability in semen quality and ship-ability
2. Uterine infection
3. Chronic scarring of the uterus subsequent to infection
4. Variability of each mare's cycle length and ovulatory function
5. Occasional abnormal Ovum or egg
6. Metabolic or hormonal dysfunction in the mare
7. Uterine cysts in great number or size
8. The times when everything seems perfect but the mare doesn't conceive anyway

It is estimated that about 55% of mares bred nationally will give birth to a live foal. Most of this loss is because of failure to conceive. With Artificial Insemination, treatment of any underlying disease, and good breeding management this number for us is closer to 80%-85%.

Embryo Transfer is another procedure which has gained wide spread appeal since the early 1990's. There are several reasons an Embryo Transfer may be something for a mare owner to consider. Firstly, many breed associations allow more than one Embryo Transfer foal each year making it possible for a valuable mare to produce multiple foals each year. Also, mares that are subfertile but still produce viable eggs can donate an embryo without having to carry the foal in a uterus that may be diseased. Another indication for E.T. allows an active show or performance mare to donate an embryo and continue work without the burden of carrying a conceptus.

The process involves three steps of equal importance. First, the donor mare is bred as normal and must conceive. Second, 6 to 7 days after breeding the donor mare undergoes a special uterine lavage to recover the embryo. Lastly, if a healthy embryo is recovered, it is implanted into a recipient mare that is synchronized with the donor mare in regards to her reproductive cycle. If all these stages are successful your valuable mare can produce a foal without having to undergo the rigors and risks of carrying a foal and giving birth.