

## Endometritis

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*A leading cause of infertility and subfertility in mares is inflammation of the inner lining of the uterus.*

The interior of the uterus of a normal fertile mare is designed to be a sterile environment, despite the fact that the reproductive tract is contaminated with bacteria by breeding, foaling and some veterinary procedures. A healthy uterus responds to these bacterial contaminants with rapid migration of neutrophils (inflammatory cells). These neutrophils kill bacteria rapidly, usually within 24 hours. The inflammation and its by-products then are mechanically removed and the infection resolves itself, returning the uterus to normal. Failure to resolve this inflammation can result in endometritis, or inflammation of the uterine lining. The delayed uterine clearance and accumulation of inflammatory by-products can collect as 'uterine fluid'. Such mares have a reduced pregnancy rate due to an unsuitable environment for the early developing embryo and in some cases experience early regression of the corpus luteum, the structure formed on the ovary responsible for maintaining the pregnancy.

Endometritis can be diagnosed by collecting endometrial swab and smear samples for bacteriological culture and cytological examination. **Acute endometritis** will have neutrophils present on the smear. **Chronic infectious endometritis** is found most frequently in older mares that have had several foals. Such mares have weakened uterine defense mechanisms that allow the normal genital flora to contaminate the uterus and develop into a persistent endometritis. Any microbial agents present may be grown on culture, and the choice of antibiotics for local treatment is ideally based on sensitivity testing of the culture's growth. Ultrasound also provides a rapid, non-invasive method of assessing the uterus. Endometritis is often suspected based on the amount of fluid within the uterus.

Endometrial secretions and the formation of free fluid may be associated with the same mechanisms that cause normal uterine edema during estrus. In many cases, the uterine fluid that accumulates before mating is sterile, low volume and contains no neutrophils. However, although initially sterile, excess amounts of fluid may act as a medium for bacterial contaminants (from breeding or 'windsucking') to multiply. Also, the quantity of fluid may be more important than its nature. If more than one centimeter of fluid is apparent on ultrasound, your veterinarian may attempt to remove the fluid (using oxytocin injections) prior to breeding. If the volume is more than two centimeters in depth, the fluid might need to be drained using a large volume uterine lavage. Another approach to treatment favored by practitioners has been the infusion of various antibiotics – dissolved or suspended in water or saline – into the uterine lumen. Systemic treatment alone or in combination with local application is suitable in some circumstances.

The number of uterine treatments required depends on individual circumstances, but daily or alternate day infusions by a veterinarian for 3-5 days during estrus works well in most cases. Defense mechanisms are highest during estrus making this the ideal time to treat and prevent future infections. However, the total number of treatments needed to resolve endometritis can never be predicted – from two to twenty may be required. Repeated endometrial swab and smear examinations are used to monitor the response to treatment.

In addition to antibiotic therapy, repeated treatment with prostaglandin F<sub>2</sub>-alpha (Lutalyse) or its analog increases the frequency of the follicular phases, or heat cycles, thus allowing intrauterine therapy to be used more readily. It also reduces the duration of the luteal phase (the 'time between heats'), a time when progesterone is present and increases susceptibility to infection, thus shortened intervals between heat cycles is an adjunct treatment in its own right. Predisposing causes to the persistent endometritis, such as defective vulvar conformation, should also be addressed.

Detecting susceptible mares can be difficult, as only subtle changes in the uterine environment may be present. Many mares show no signs of inflammation before breeding, but fail to resolve the inevitable endometritis that follows breeding. It is particularly important to recognize and manage appropriately the *older maiden mare*, as in many cases these mares are susceptible to post-breeding endometritis even though they have never been bred before. Often Sport or Warmblood mares may not be bred until they are in the teens, and these older maiden mares can be very difficult to get in foal, almost resembling a syndrome. Older maiden mares can have an abnormally tight cervix that fails to relax properly during estrus. Fluid is unable to drain and accumulates inside the uterus. In many cases, this fluid is negative for bacterial growth or neutrophils. All too often owners assume that the fertility of these mares is comparable to that of young maiden mares. One of the most important aspects of breeding these mares is owner awareness of the high possibility that she may be a problem. Evaluation of the uterus post-breeding is a crucial time to assess all mares.