

# Top Reasons for Early Embryonic Death Described (AAEP 2012)

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Pregnancy loss in the early days of gestation perplex veterinarians and owners perpetually; after taking every measure to protect the embryo visible at Day 15 after ovulation, mares sometimes come up empty. And while scientists have learned volumes about getting mares in foal, there's plenty left to decipher when it comes to keeping them there in the early days of conceptus life.

Tom Stout, VetMB, PhD, of the Department of Equine Sciences at Utrecht University, in The Netherlands, observed, "We have achieved impressive improvements in per-cycle and per-season pregnancy rates in well-managed horse farms over the past 20 years. (However,) our knowledge of factors contributing to the loss of 15% of the pregnancies detected at Day 15 after ovulation is lagging."

The majority of pregnancies, more than 60% in fact, are lost by Day 42 after ovulation.

Scientists know little about the reasons for early embryonic death (EED) and to what extent they can prevent it. Although they generally believe a "progesterone insufficiency" is the underlying cause of EED. At the 2012 American Association of Equine Practitioners' Convention, held Dec. 1-5 in Anaheim, Calif., Stout indicated that progesterone insufficiency is not often (or always) the cause of EED.

"Although progesterone produced by the mare's ovary is needed to maintain early pregnancy, there are other causes of EED that need to be considered," said Stout.

The main three categories of EED causes include:

1. Embryonic abnormalities (e.g., the veterinarian detects a chromosomally abnormal embryo or a conceptus that is smaller than expected on a particular day post-breeding);
2. Inadequate maternal environment (e.g., an aged or degenerate uterus provides inadequate nutrient provision, or unresolved uterine infections/inflammation resurge); and
3. External factors (e.g., severe stress or illness).

The first category is particularly important because abnormalities of the embryo are thought to account for a significant proportion of EEDs.

"There is evidence that a sizable proportion of embryos contain chromosomally (genetically) abnormal cells," Stout added.

The mare or the stallion can contribute these abnormal cells, particularly aged mares or those bred "too late after ovulation," or stallions producing damaged or unstable sperm. Or, these cells can arise due to a sub-optimal uterine environment.

"Currently, the best ways to prevent EED are nonspecific, but still very important," Stout relayed, and they include:

- Managing the mare carefully to minimize persistence of post-breeding endometritis—the normal inflammation of the lining of the uterus after mating. This clears in normal mares but can prevent establishment of the conceptus if it lingers.
- Address anatomical defects that permit air or urine to accumulate in the vagina, which can also contribute to the endometritis described;
- Reduce twin pregnancies;
- Maintain a closed herd to prevent disease transmission that could compromise pregnancy; and
- In some cases, your veterinarian might prescribe specific pharmacological treatment.

According to Stout, "Many cases of EED are probably not preventable and, although some methods aimed at preventing EED are in common use they may be successful in only a small proportion of cases."

He acknowledged that veterinarians need specific strategies to combat the underlying causes of preventable EED; only through continued research will they be able to develop successful, reliable approaches.

Disclaimer: Seek the advice of a qualified veterinarian before proceeding with any diagnosis, treatment, or therapy.