



## A Brief Overview of Artificial Insemination and Embryo Transfer at The Arundel Equine Hospital

The team of dedicated stud vets at the Arundel Equine Hospital made up of Ed Lyall, Paula Broadhurst, Simon Staempfli, Charlie Pinkham and Suzanne Duncan, provide a wide range of stud medicine services, including Artificial insemination (AI) and Embryo Transfer (ET), the team are all very experienced and hold postgraduate qualifications in reproductive medicine.

AI is the technique used to transfer appropriately processed semen, collected from a stallion, into the uterus of a mare at the correct time in her oestrus cycle in order to obtain a single pregnancy. The semen can either be fresh, chilled or frozen and it can mean both stallions in the UK and abroad can be used, even semen from deceased stallions. Fresh semen is usually collected, extended and stored in an airtight, light free container for up to 8 hours at room temperature. Semen that is to be used longer than 8 hours after, but within 48 hours of collection should be chilled to 4°C and stored for shipping in a special container. Semen that is required to last longer than 48 hours is frozen in liquid nitrogen at a temperature of -196°C. The success of an AI program is very dependent not only on the stallion's semen but also on the careful veterinary management of the mare pre and post covering. This means that the semen is placed in the uterus at the correct stage in the mare's cycle and appropriate post insemination checks and treatments are made.

The other advantages of AI include keeping your mare and foal at home under your own supervision. Additionally we find the intensive veterinary management required with mares to successfully perform AI can, in many circumstances, improve the chances of obtaining a pregnancy, as the probability of infection either bacterial or venereal is reduced. The addition of extenders and antibiotics to the semen can also improve the fertility of some stallions by improving the lifespan of the sperm. AI allows for the safe mating of mares or stallions with injuries and can prevent injury to valuable stallions by mares of poor temperament.

At Arundel Equine Hospital we use the most up to date techniques to manage AI mares, including insemination of frozen semen using a deep intrauterine technique. Over the last few years this technique has been used to

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inseminate mares with small volumes of chilled semen from the continent and we have seen a significant rise in the in-foal rate. Experience of dealing with thousands of mares over the years has allowed us to develop effective, simple routines and protocols for artificial insemination. Attention to detail is the key to good mare fertility.

The collection of frozen semen can allow a stallion to compete internationally without having to worry about stud duties and temperament changes whilst covering, similarly ET is a technique that has been developed to enable mares to continue to compete while still producing foals. A mare's fertility decreases as she gets older and this reduction in fertility appears to be more rapid in mares that have never had a foal. Therefore, once a mare is retired from competition in her teenage years and put to stud, her ability to become pregnant can actually be very poor.

To try and avoid this situation, owners will sometimes breed from fillies at 2 to 3 years of age prior to breaking in, so that they at least have 1 offspring before starting a competition career. Alternatively ET can be used to produce foals while the mare is actively competing. Embryo Transfer involves the careful synchronisation of a donor mare (the mare you want the foal from) with a recipient mare (the mare we will transfer the pregnancy into). Then on a day individually selected depending on the situation, (usually day 7 or 8 after ovulation), the embryo is carefully flushed out of the donor mare and transferred to the recipient mare. A pregnancy scan is then performed about 1 week later on the recipient mare and subsequent scans as indicated.

The synchronisation of the recipient mare with the donor mare plays a large part in the success rate of this procedure and it can be quite difficult to do as not all mares 'read the text book' and respond to the medications the way we would like. Therefore we need to start off with a number of potential recipient mares so if some don't respond as hoped we still have others to choose from. Fortunately studies have shown no decrease in the success rate of the transfers, if the embryo's are carefully chilled and transported within 24 hours to a facility with a number of recipient mares available. This also reduces the expense of finding, keeping and housing a number of recipient mares by the owner of a donor mare.

Since 2008 the stud vet team at The Arundel Equine Hospital have performed a significant number of successful ETs by flushing the donor mare and directly transferring the embryo into a recipient mare or sending the embryo chilled to a recipient mare facility. The donor mares are covered via AI in their own stable yard or at one of our AI centres. The flush can be carried out at the yard, AI centre or at our hospital. The flushing process takes between 30 and 60 minutes to perform, then donor mare can go home to continue her normal competition routine. Once processed

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properly the embryo is either directly transferred into the recipient or transported chilled, same day by courier to the recipient mare facility where the embryo is transferred into the mare that was best synchronised with the donor.

**Over the last few years we have paid attention to detail and developed protocols that have given us excellent success rates with transferred embryos. In the 2012 season we achieved a 100% transferred embryo take rate, all the embryos that we found on flush and transferred directly into recipient mares successfully resulted in a sustained pregnancy.**

We aim to allow sport horse mares that are of importance for breeding to remain in work and competition. Our protocols mean that mares can remain at home with the rider so there is no check in training or competition.

Prior to embarking on an AI or ET program with a mare it is important to become aware of all the facts and to balance out the pros and cons. One of the most important factors to consider is the cost. The keep, transport and veterinary costs sending the mare away to stud, must be balanced against the veterinary costs of AI or ET and keeping the mare at home. Many of the veterinary costs will be incurred either way and so it can be a real advantage to keep the mare at home. Some veterinary practices will have a fixed price scheme for AI programs. These can vary considerably, they may require the mare to go to a stud that the vet attends regularly and some may not include visit fees, pre-breeding swabs or pregnancy scans.

If you are interested in breeding from your mare in 2014 via natural cover, AI or ET contact the AEH now so that one of our dedicated Stud Vet team can explain the process in greater depth to you, one on one. Your options and which one of our competitive package deals best suits your individual situation can then be discussed. Mares can be worked on at owners yards within the practice area or mares from further afield can be boarded at the hospital or at one of several AI centres that we service.

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