EQUINE REPRODUCTION SVC

Keeping Mares in Foal

Timely intervention can mean the difference between a live foal and a lost one. “In some cases, by the time a breeder or equine veterinarian recognizes the mare is showing signs of premature birth, any assistance is likely insufficient, resulting in a weak foal unlikely to survive,” said Kristina Lu, VMD, Dipl. ACT, of Hagyard Equine Medical Institute, in Lexington, Ky.

One-third of all stillbirths and deaths within 24 hours of birth are due to infections of the fetoplacental unit, she noted. Other causes include bacterial infections, complications during birth, congenital anomalies (e.g., contracted foals—those that are very upright or buckled forward at the pasterns, fetlocks, and/or knees), premature placental separation, and twins. “If we can manage infection and inflammation … we are targeting approximately one-third of the problem,” Lu noted. If Lu suspects or diagnoses infection, she treats the mare with pentoxifylline (to reduce inflammation), administers antibiotics, and gives the synthetic hormone altrenogest to help maintain pregnancy. Other options to consider on a caseby-case basis for maintaining pregnancy include using tocolytic drugs to suppress uterine contractility, nasal oxygen delivered to the mare to increase oxygen delivery to the foal, and a technique called cervical cerclage, which involves tying a suture around the cervix to prevent bacteria from reaching the uterus through the vagina and cervix. Veterinarians use the latter technique only sparingly, and they must remove the suture prior to foaling.

Health During the Final Countdown

Even in seemingly healthy mares, pregnancy in the final month can quickly change from heavenly to horrific. “In the past five years, substantial progress has been made identifying high-risk mares and devising appropriate management plans,” relayed Tibary. Such mares include old maiden mares, those with cervical defects, and mares with a history of either recurrent pregnancy loss or of medical/surgical problems that pregnancy can exacerbate (e.g., equine metabolic syndrome). Five major problems to consider in the final pregnancy month: 1. *Colic* Whether due to genital (e.g., uterine rupture) or nongenital (e.g., intestinal) causes, colic is relatively common in the late-pregnant mare. Veterinarians might need to take steps to avoid premature foaling in the colicking mare.

Abnormal vaginal discharge

This can be challenging to recognize; look for clumped hair under the tail. Bloody discharge or a combination of mucus and pus should warrant veterinary examination; the latter indicates infection and requires immediate treatment.
Breeders might overlook examining an apparently healthy mare in the face of a seemingly thriving foal.
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3. *Abnormal mammary gland development*

This includes premature udder development or lack of development altogether. The former along with a mucopurulent vaginal discharge suggests Placentitis (placental infection). A mare with premature udder development might be carrying twins, or the condition might warn of impending abortion. Fescue toxicity can prevent udder development, or an udder might develop unexpectedly simply because someone recorded the incorrect breeding date.

4. *Abnormal abdominal development or shape*

The most common causes include prepubic tendon rupture (which supports the mare’s abdomen, rupture is painful, makes foaling difficult, and is life-threatening) or mammary suspensory ligament, development of a body wall hernia, or production of too much amniotic fluid. A rectal exam and transabdominal ultrasound can help diagnose the cause and guide management.

5. *Other* Accidents

Prolonged pregnancy, and musculoskeletal problems (e.g., osteoarthritis) can negatively impact a broodmare’s health. If any one of these problems develops, it is imperative to stabilize the patient with intravenous fluids, anti-inflammatory drugs, and antimicrobials. “Owners need to carefully monitor their pregnant mares to quickly recognize if a problem is developing, and veterinarians must devise suitable treatment plans,” Tibary concluded. “Referral should be considered in all cases … particularly if close and continual observation is not possible.”

Metabolic Syndrome and Pregnancy

Equine metabolic syndrome (EMS) defined as obesity, insulin resistance, and high blood insulin levels—is dangerous for any horse, but it puts pregnant mares in especially precarious situations. It’s crucial to address EMS and related conditions (i.e., laminitis) in mares to minimize risk of fetal compromise and abortion. “During pregnancy, metabolic syndrome is a normal occurrence because it helps redirect nutrients from the mare to the developing foal,” explained Peter Morresey, BVSc, MACVs, Dipl. ACT, ACVIM, of Rood & Riddle Equine Hospital, in Lexington, Ky. But problems can arise if the mare already has EMS before she’s in foal. “In mares that have metabolic syndrome before they become pregnant, the condition can become exacerbated,” he said. For example, EMS mares have alterations in insulin and lipid (good and bad fats) circulating in their bloodstream, can develop laminitis, and potentially abort. These mares are generally less sensitive to the hormone insulin than their healthy counterparts, resulting in higherthan-normal blood glucose levels. To help normalize insulin dynamics during gestation, Morresey suggested owners take the following steps:

- Feed these mares only hay/hay substitute, remove grain and sweet feeds from their diets, and restrict pasture access;
- Consider exercise if laminitis isn’t a concern, to help control obesity; and
- Discuss using metformin (an oral antidiabetic drug), L-thyroxine (a thyroid supplement), and/or pergolide (for equine Cushing’s disease) with your veterinarian; these could benefit some horses.

“Laminitis in horses with metabolic syndrome is a major concern,” Morresey advised. Consult a farrier or podiatrist immediately in such cases. “Aggressive and early management of this condition (such as cryotherapy—intensely cooling the horse’s feet) is paramount to a successful case outcome,” saving the mare.

Top 3 Reasons for Embryonic Death

Pregnancy loss in early gestation can be perpetually perplexing; after taking measures to protect embryos visible at Day 15 after ovulation, mares can come up empty. Canadian researchers recently showed that you can lead a mare to a stallion, but you can’t necessarily make her ovulate … even using acupuncture. Acupuncture is a popular traditional therapy in China, but physicians and veterinarians in Western countries have not yet fully adopted this adjunct medical technique. This is partly due to lack of scientific evidence supporting its efficacy, noted Nora Huaman Chavarria, DVM, MVetSc, of the University of Saskatoon’s Western College of Veterinary Medicine. Veterinarians already use acupuncture for a wide variety of mare conditions, such as sub- or infertility, so she set out to study its usefulness. “We hypothesized that acupuncture might help induce ovulation in mares based on some convincing evidence in human studies that found acupuncture treatments have a positive effect on irregular cyclicity and, therefore, infertility in women,” said Chavarria. The researchers randomly split 30 healthy, cycling mares into three groups. They treated the first group with the hormone human chorionic gonadotropin (hCG), which is known to induce ovulation. They administered saline and performed acupuncture in the second and third groups, respectively. “This study did not find any impact of acupuncture on ovulation,” she noted. “Further, no changes in hormone profiles were noted between any of the three treatment groups.”Some equine reproductive specialists have embraced acupuncture, and anecdotal reports of success abound. As such, Chavarria believes further research into equine acupuncture is warranted. “Well-designed clinical trials will help clinicians and owners make the right decision in the choice of treatment for a specific condition,” she concluded.

Tom Stout, VetMB, PhD, of the Department of Equine Sciences at Utrecht University, in The Netherlands, said that the majority of pregnancies, more than 60% in fact, are lost by Day 42 after ovulation. Scientists know few reasons for early embryonic death (EED) and how to prevent it. They generally believe a “progesterone insufficiency” is the underlying cause, but Stout said that’s not often (or always) the cause of EED. Causes include:

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

“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 conceptus establishment if it lingers.
- Addressing anatomical defects that permit air/urine to accumulate in the vagina, which can contribute to endometritis;
- Reducing twin pregnancies;
- Maintaining a closed herd to prevent disease transmission that could compromise pregnancy; and
- In some cases, your veterinarian might prescribe pharmacological treatment.

Stout noted, “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.”

Mating your Mare Postpartum

The major dilemma for breeders is whether to breed on the foal heat (but) not all mares cycle normally following the foal heat. In most performance horse circles successful broodmares are expected to have one foal per year for six out of seven years. This stirs up the perennial question, should you breed on foal heat? “There is only a period of approximately one month after foaling to establish pregnancy if the mare is to foal at the same time the following year, which is often desired,” explained Stout. Although mares come into heat within five to 12 days of foaling, and many can conceive, they might not be ready to maintain pregnancy. The uterus might not be fully finished undergoing normal involution (returning to its regular size and shape), making it uninhabitable by a fetus, or the mare could develop post-breeding endometritis. “The major dilemma for breeders is whether to breed on the foal heat or to wait until the second heat, when there is a better chance of pregnancy maintenance,” noted Stout. “The catch is … not all mares cycle normally following the foal heat. ”Factors to consider when making this decision include:

- *Time of year the mare foals* Mares foaling—early in the year might be more at risk of not resuming normal cycles after the foal heat (due to decreased daylight when mares’ cycles are normally quiescent; keeping such mares under lights starting two to three months before foaling can help avoid this). Late foaling leaves fewer breeding chances, making breeding on foal heat appealing.
- *Complications related to foaling*
If the mare had placentitis, a dystocia, retained fetal membranes, etc., you should avoid breeding on the foal heat.
- *History of endometritis* Mares with a history of endometritis might be more likely to develop it if bred on foal heat.
- *Results of a pre-breeding clinical exam,* -Performed six to eight days post-foaling, and not to be confused with the postfoaling exam that all mares and foals should have within 24 hours of foaling, a rectal exam and ultrasound can help the veterinarian determine whether the uterus is involuting well and whether ovulation will soon occur (usually around 10-15 days post-foaling). There are ways to manipulate the mare pharmacologically to either optimize uterine involution or delay foal heat; but Stout recommended skipping the drugs and opting instead to perform an exam eight to nine days after foaling to assess involution and estimate the next ovulation date.

“If the first ovulation date is known then a mare can be treated pharmacologically to shorten the time between heats, which can save a few valuable days,” he advised. In other words, if the uterus is involuting well at eight to nine days after foaling and there is no evidence of any other issues, then breed on. Otherwise, try to get her to cycle normally to ensure there is no delay between foal heat and the next regular heat. This will also allow the uterus to recover, while not pushing the mare too far off the breeding calendar for the year. Optimize lighting, nutrition, and exercise to minimize these “days lost” and maximize involution.

Beware of Problems up to Two Weeks after Foaling

Even though a mare and foal might seem fine initially after birth, complications in the mare can arise anytime during the immediate postpartum period, which lasts up to two weeks after foaling, said Ahmed Tibary, DVM, PhD, Dipl. ACT, from Washington State University’s College of Veterinary Medicine. “All mares should be examined by a veterinarian within 12-18 hours of foaling, even when everything seems to be normal, he advised. Examination should begin by simply observing the foal. Many postpartum conditions will result in poor foal-mare bonding. He also recommended owners keep the placenta in a cooler until a practitioner can examine it and hold off on giving oxytocin (to help the uterus expel fetal membranes) until he or she directs. Some issues in the immediate postpartum period can be mild, such as behavior issues and foal rejection. Others are much more serious. In cases of known retained placenta, if the mare is colicky, or if she had a difficult labor (dystocia), Tibary recommended conducting advanced clinical evaluation, including transabdominal ultrasound or even hospitalization. Other specific life-threatening conditions in the postpartum period include:

- Septic metritis, an infection of the uterus that can lead to laminitis;
- Hemorrhage from the urinary and/or genital tract (may or may not be visible);
- Uterine tears, rupture, or prolapse;
- Colic from twists/displacements;
- Vagina, rectal, or perineal tears; and
- Lack of milk production or infection of the mammary gland (mastitis).

Knowing risk factors for the conditions, such as age, breed, and previous injury/trauma (especially to the reproductive tract), together with postpartum exam findings, can expedite diagnosis, testing, and treatment of affected mares.

Treating fungal infections in mares

Untreated uterine fungal infections, due to yeast or mold, can lead to fertility problems. Familiarity with the most common fungi infecting the mare and their respective drug susceptibilities is particularly important when practitioners must start treatment before culture results are complete, said Marco Coutinho da Silva, DVM, PhD, Dipl. ACT, of The Ohio State University’s College of Veterinary Medicine. From 1999 to 2011, researchers isolated 102 fungi, most commonly yeast, from 92 mares. Almost 100% of tested fungi were susceptible to broad-spectrum antifungal agents called “polyenes.” In addition, the study authors found:

- Most fungi (47-81%) also responded to treatment with azole medications (e.g., ketakonazole, itraconazole, miconazole);
- Yeast were 100% susceptible to polyenes and least susceptible to miconazole; and
- Susceptibility patterns of particular types of molds (septate molds, the second most common type of fungi isolated from mares’ uteri) were quite variable, and none of the mold organisms were susceptible to fluconazole.

Before initiating therapy the practitioner should also consider the safety of each drug and route of administration. Coutinho da Silva concluded, “For example, fluconazole is a very safe drug that can be administered orally, intravenously, or locally and has a good efficacy against yeast. That’s my drug of choice for yeast infections.”