

Modified-Live IBR Vaccines Implicated in Abortion Cases

When cattle producers select a vaccine to protect against infectious bovine rhinotracheitis (IBR), they expect their cows and heifers will produce a healthy calf. Understandably, the health and well-being of breeding stock is paramount in cow-calf and dairy operations. Often the question arises as to whether an inactivated (INV) or modified-live (MLV) vaccine is best suited for use in pregnant cows.

In 2004 some MLV vaccines got the green light for use in pregnant animals, but recent research by university researchers and veterinarians demonstrates that MLVs can put pregnancies and conception rates at risk, unlike their INV counterpart.

Just what *are* the risks? Researchers at several universities recently reported MLVs can have a detrimental effect on reproduction, resulting in abnormal estrous cycles, reduced conception rates and, potentially, abortions.

Two articles have recently been published in peer-reviewed scientific journals to support these findings. A study published in the January 2013 issue of *Theriogenology*, raises questions about using MLVs in breeding females and naïve heifers.

Another article published in the *Journal of the American Veterinary Medical Association* (JAVMA) addresses a diagnostic case study following multiple abortions within a University of Wyoming-owned herd of replacement heifers after being vaccinated with an IBR MLV.

University of Wyoming Herd Experiences 25% Calf Crop Loss

“In this instance, animals in our university herd had been appropriately vaccinated prebreeding with a modified-live vaccine, and they were vaccinated again at about seven months of pregnancy,” notes Dr. Donal O’Toole, MVB, PhD, Department of Veterinary Science, University of Wyoming. O’Toole explains that starting around 30 days postvaccination, a series of abortions began which continued out to about 50 days. The total reproductive loss was a disturbing 25 percent.

“What we found at the Wyoming State Vet Lab when we started looking into these recent episodes was an association with recent use of modified-live IBR vaccines, despite the fact they were administered following label directions,” O’Toole explains. The heifers had classical lesions caused by IBR, and there was no evidence of any other causes of abortion in the animals. “The conclusion my colleagues and I came to was that using a modified-live IBR vaccine can cause abortions,” O’Toole says.

He isn't alone in that conclusion. Several other university veterinarians have determined that vaccinating with an MLV can be detrimental to herd reproduction.

South Dakota State University Study: Abnormal Heats, Lower Conception Rates

Dr. Chris Chase, DVM, MS, PhD, South Dakota State University, has conducted extensive studies on reproduction in cattle. "Producers believe IBR is just about a respiratory disease, but the virus has an important role as a pathogen in the reproductive tract," says Chase. Chase discovered a modified-live IBR vaccine affected conception rates in cattle. His study, which was published in *Theriogenology*, noted that IBR from an MLV is more likely to get into the bloodstream than a field strain, affecting follicle development and estrogen level in heifers. In the trial heifers administered an MLV experienced more abnormal estrous cycles and lower pregnancy success.

Dr. Chase strongly advocates using an INV, explaining that it has a much higher safety profile than an MLV.

Dairies Dramatically Improve Herd Reproduction with Inactivated Vaccines

Dr. Doug Scholz, DVM, director of veterinary services for Novartis Animal Health, points to two large dairy operations in Colorado that were frustrated by low conception rates and high pregnancy losses. The vaccination programs on the dairies were similar, with heifers getting three or four doses of a five-way IBR MLV.

"Their abortion rates regularly exceeded 20 percent, and would jump up to 25 to 35 percent at any given time," Scholz notes.

Diagnostic tests indicated high IBR titers in blood samples. In another test, a university diagnostic lab confirmed IBR virus in an aborted fetus. Once both dairies replaced the IBR MLV with Vira Shield[®], an inactivated vaccine, there were dramatic improvements in the conception and pregnancy rates.

Dr. Clinton Jones, PhD, a virologist at the University of Nebraska, explains that vaccination with an IBR MLV may create problems for reproduction. Like field strains of IBR, the vaccine strain has the potential to reactivate from latency following a stressful event or immune suppression.

"Modified-live viruses, if reactivated, are likely to enter the blood system and cross the placenta. The IBR virus prefers actively growing tissue, which is characteristic of a developing embryo," Jones says. He worries that a cow vaccinated with an MLV has the ability to infect others in the herd by shedding the IBR virus.

“The most important thing about managing IBR and modified-live vaccines in herds is that one should never vaccinate a pregnant cow with an MLV,” says Jones.

Dr. O’Toole sums it up simply. “If you’re going to vaccinate animals for IBR, use an inactivated vaccine. Inactivated vaccines are very safe, and have a good track record in terms of efficacy. There are several recent papers demonstrating that they offer very good protection. There is no reason to risk using a modified-live product in pregnant cattle.”

According to Dr. Scholz, choosing Vira Shield for breeding or pregnant animals protects investments in reproductive programs, supports sustained pregnancies and eliminates undue risk to the calf crop.

To hear more from industry-leading researchers and veterinarians or to access supporting evidence documents, visit virashield.com.

VIRA SHIELD is a registered trademark of Novartis AG, Basel, Switzerland.