

Michael D. Piontkowski, DVM
Senior Staff Veterinarian
Technical Service

Tetanus in Farm Animals

INTRODUCTION

Tetanus is a profoundly fatal disease in domestic farm animals, with worldwide distribution. There is a wide variation in susceptibility to the disease with horses and pigs being highly susceptible and cattle, sheep and goats being less susceptible. The organism that causes the disease, *Clostridium tetani*, requires an anaerobic environment (no oxygen) in which to grow. Animals are at greatest risk of infection, due to growth characteristics of the organism, when the bacteria enter an area of the body without exposure to outside air. Examples of these instances would include contamination of deep penetrating wounds, post-castration and post-tail docking (especially with banding procedures), umbilical infections, severe skin lacerations and post-birthing uterine infections. Once the organism has entered the body under the right circumstances, it releases an exotoxin that binds to certain nerve fibers and results in muscle rigidity. Clinical signs noted secondary to the muscle rigidity include a "sawhorse appearance", a fixed stare, erect ears, a reluctance to eat or drink due to a "locked jaw", an elevated tail, flared nostrils and a protruding third eyelid. Even with treatment at this point, death is usually imminent.

CONTROL AND PREVENTION

ACTIVE IMMUNIZATION

The best method of dealing with this disease, due to a poor response to treatment, is with an active immunization program. An active immunization program involves vaccinating an animal with tetanus toxoid (inactivated tetanus toxin) and repeating this immunization in about 14 to 28 days. Protection for that particular animal will be achieved in about 7 to 14 days after the second injection and protection lasts about a year. Immunity achieved with this type of vaccination program is due to the body recognizing the inactivated toxin in the vaccine and certain white blood cells forming antibodies in response. In addition, the body will "remember" that particular vaccine and be ready to respond quickly the next time it "sees" the toxin again. Once this type of immunity has been established in an animal, if an animal is exposed to this disease, a booster injection of tetanus toxoid will quickly reestablish protective immunity in that particular animal. This type of immunization program results in the best immunity versus the disease, it is long lasting and can be used to increase the amount of antibodies passed from the dam to her offspring for protection to tetanus. On the other hand, protection to tetanus is not immediate and is not achieved until a short period of time after the second injection.

PASSIVE IMMUNIZATION

An alternative to active immunization is passive immunization. This involves administering antitoxin, which contains antibodies to the tetanus toxin, to a susceptible animal. This antitoxin is derived from the blood of horses that have been actively vaccinated with tetanus solutions and processed to contain high levels of antibodies to this particular disease. Administration of tetanus antitoxin to a susceptible animal results in immediate, short-term protection. This protection lasts about 10 to 21 days, depending upon the degree of disease exposure and the species of animal in which it is used. Passive immunization protection is recommended for animals that have not been vaccinated with tetanus toxoid or the animal's vaccination history is unknown, and the animal is exposed to the disease situation or will be shortly. Examples of these situations would be a deep penetrating wound in an unvaccinated animal or an animal in which the vaccination history is unknown, tail-docking and castration of newborn lambs and umbilical infections. These situations would not allow enough time for active immunization to be established prior to disease occurrence. This type of immunization program results in short term protection and the fact that the product is derived from horse blood, can result in allergic reactions in a small percentage of animals post-administration.

Colorado Serum Company proudly produces and distributes both forms of tetanus protection for the livestock owner. Contact your local distributor and request these and other fine products from Colorado Serum Company

