

Trichomoniasis

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Trichomoniasis, or "trich," is a venereal disease of cattle caused by a protozoan parasite, *Tritrichomonas foetus*. The disease has been reported worldwide, and while few estimates of the geographic prevalence of trichomoniasis in the United States are available, veterinarians and research workers are reporting an increased rate of diagnosis in the western U.S. It is estimated that the economic losses to the U.S. beef industry from reduced conception rates, lowered weaning weights and increased culling due to this disease exceed \$100 million annually.

The name tritrichomonas means "three-haired, single-celled protozoan," which aptly describes the organism. It is a pear-shaped, flagellated protozoan with three small flagella protruding from its anterior (front) end and a single flagellum extending from the posterior (rear) end (Figure 1).

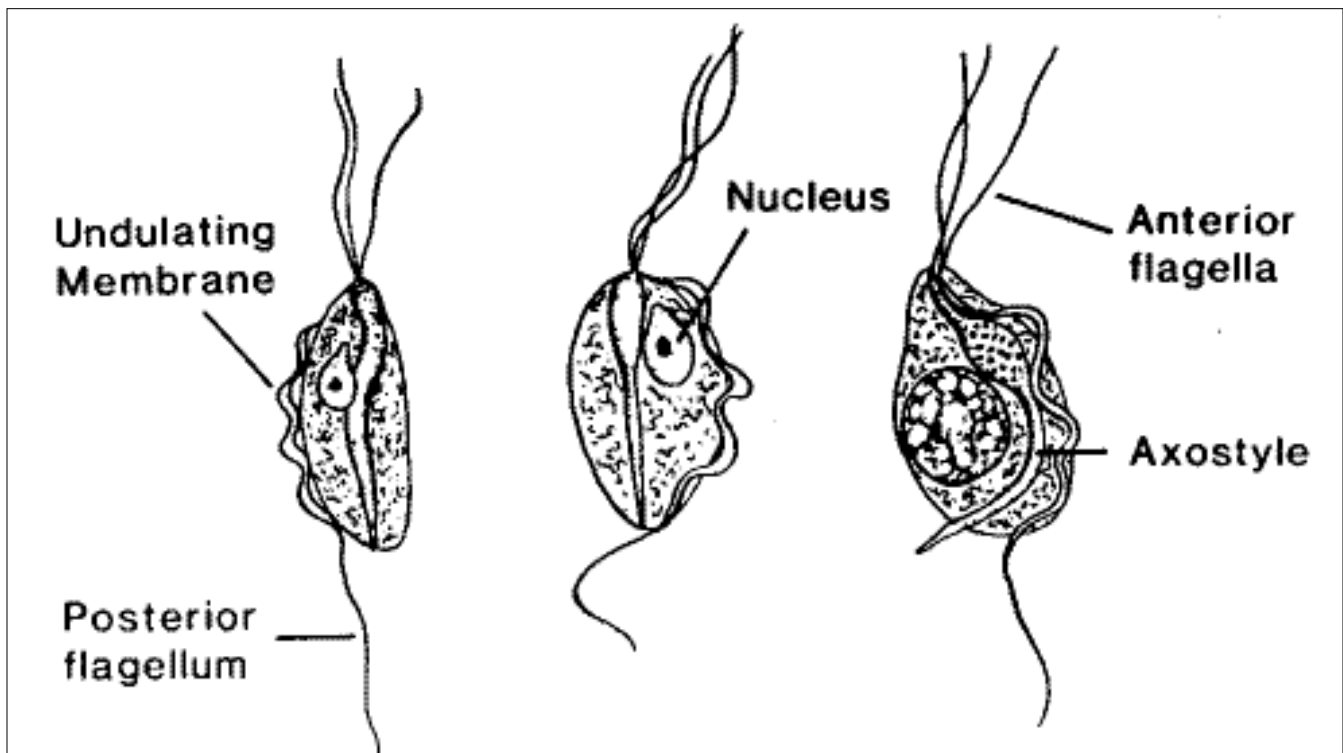


Figure 1. Diagrammatic representation of *T. foetus*. (Adapted from BonDurant, R.

H. Diagnosis, *Treatment and Control of Bovine Trichomoniasis*. Compendium on Continuing Education for Veterinarians, 7(3): March 1985, S179-S187.)

Like most venereal diseases of domestic animals, *T. foetus* has few adverse effects in the bull — it is the cows and heifers that suffer the consequences of the infection. The disease causes virtually no outward signs of illness; therefore it is often present in a herd for a considerable time, causing devastating losses due to poor calf crops and prolonged calving seasons before it is suspected and diagnosed.

In bulls, the organism lives on the tissue lining of the penis and prepuce (sheath). Bulls less than 4 years of age tend to clear themselves of the infection, while those 4 years or older are often infected for life.

Infection in the cow occurs primarily by exposure to an infected bull at breeding, but contaminated semen or contaminated insemination equipment also may be sources of infection. The initial infection usually does not interfere with conception but rather results in death of the embryo 15 to 80 days later. Cows and heifers typically return to estrus (heat) one to three months after breeding, but a period of infertility may last for two to six months as a result of the infection (Figure 2). Some infected cows may develop pus in the uterus while others may abort in later gestation. Cows may remain chronically infected, yet be able to deliver a normal calf. This condition is rare but of concern, because these animals can serve as a source of infection to bulls in the following breeding season.

Symptoms in an infected herd appear as an increasing number of open cows, or a calving interval that is prolonged over several months. Pregnancy rates of 30 to 40 percent are not uncommon, especially in heifers. A typical pattern of pregnancy comparing a non-infected herd to an infected herd is shown in Figure 2.

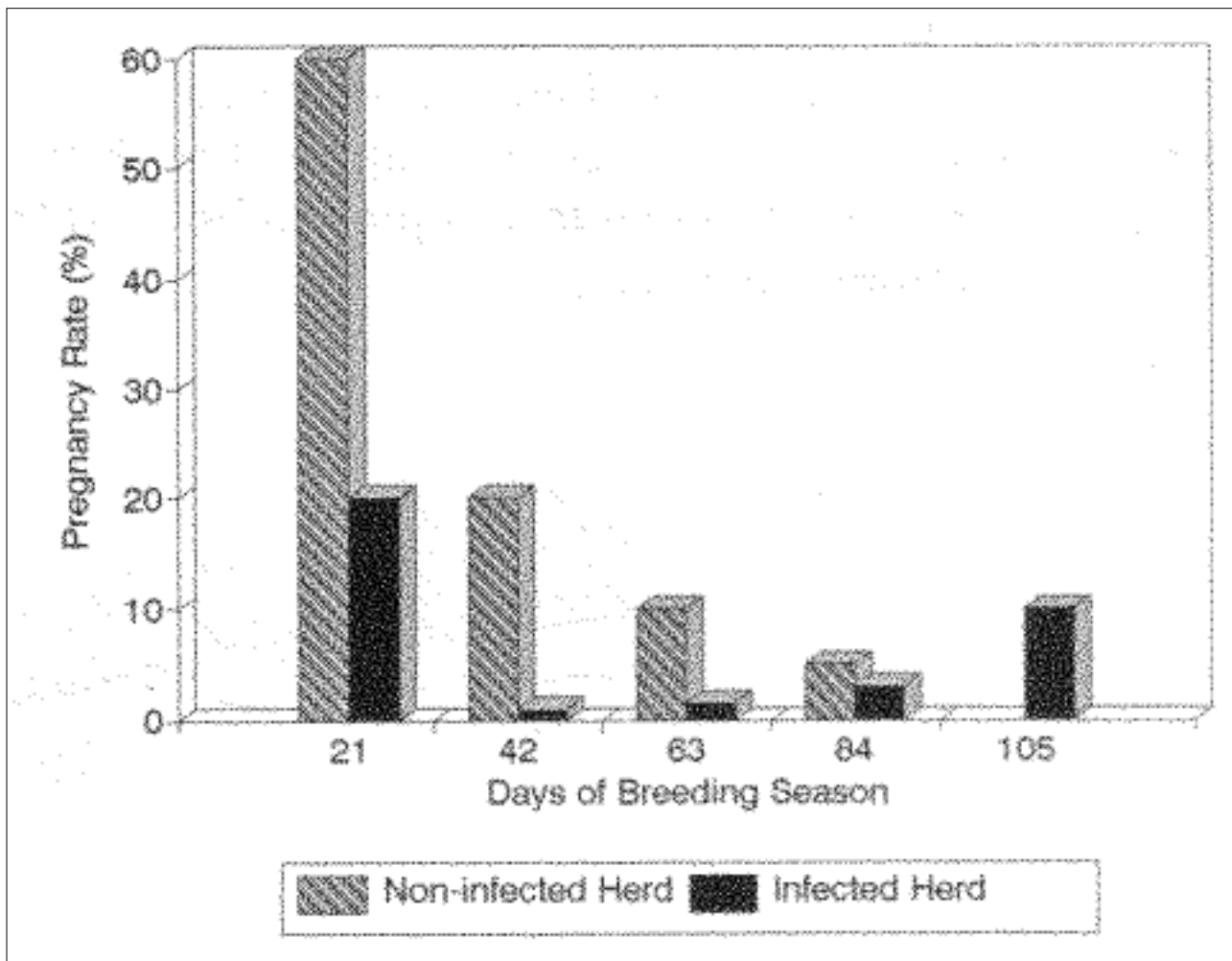


Figure 2. Example depicting a typical difference in the pattern of pregnancy between an infected and a non-infected herd.

Diagnosis of trich is difficult because many other factors may also reduce the reproductive efficiency in a herd. If trichomoniasis is suspected, your veterinarian is the most qualified person to collect samples and make the diagnosis. The collection and culture methods must be carefully chosen, since the success of getting a positive diagnosis can be greatly affected by the method used. In the bull, the number of organisms cultured from the prepuce can be increased if he is isolated from females for one to two weeks prior to sampling.

Because the process of sample collection and examination procedures are only moderately accurate, confirmation of trichomoniasis infection in a herd may require several samplings. The chances of diagnosing trichomoniasis by examining a single, cultured sampling from the prepuce of an infected bull has been estimated to be as low as 78 percent. Consequently, it is highly recommended that three successive cultures be taken from bulls at weekly intervals. With this method, the probability of an infected bull escaping diagnosis is 1 per 1,000, or 0.001.

Currently, the most common method of sampling used by veterinarians is a dry infusion

pipette with a 12-cc syringe attached. In the bull, the pipette is inserted into the prepuce to the level of the fornix (Figure 3). The pipette is then scraped vigorously across the surface, while suction is applied with the syringe. In the cow, the same technique can be used to collect mucus from the cervix.

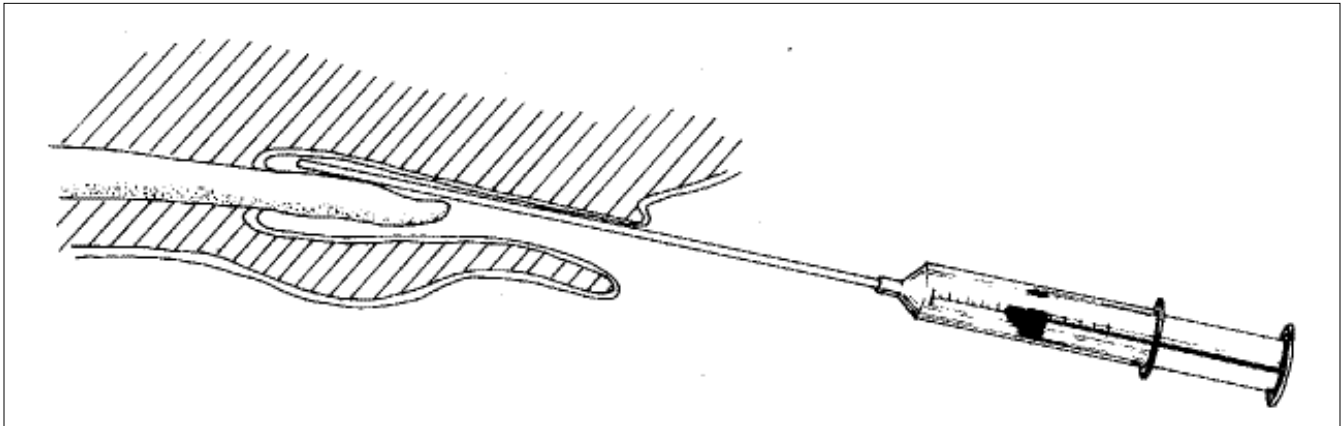


Figure 3. Diagrammatic representation of sampling method in the bull. (Adapted from BonDurant, R. H. *Diagnosis, Treatment and Control of Bovine Trichomoniasis*. Compendium on Continuing Education for Veterinarians, 7(3): March 1985, S179-S187.)

The samples should be placed in culture media as soon as possible after collection to ensure that viable organisms are present for culture. Positive samples usually can be diagnosed within 48 hours but may take as long as six to eight days. If no trich organisms are found by day 10, the sample is usually considered negative.

Prevention and control

At the present time there are no effective treatments for bovine trichomoniasis that are approved by the Food and Drug Administration. In the past, various unapproved treatments have been advocated, with a variety of results, but most were expensive, labor intensive, and caused a multitude of undesirable side effects. While there isn't a recommended treatment, the disease can be prevented, or controlled in the event of established infection, by following some relatively simple and inexpensive management programs.

Prevention. Since trichomoniasis is a venereal disease and can only be transmitted by sexual contact or by infected mechanical carriers brought in contact with the reproductive organs, the best prevention is to never allow infected bulls or cows to come into contact with a susceptible herd. Specific measures include the following:

- Keep fences in good repair to prevent accidental contact with potentially infected cattle. Monitor traffic in and out of the herd.
- Replacement females should either be pregnant or less than six months of age.
- Replacement bulls should be known virgins. If the sexual history is unknown or questionable, replacement bulls should be cultured three times, as described above,

before they enter the herd.

- Sexually rest bulls a minimum of three months between use. The longer the rest period, the better, as this allows more time for an infected bull to potentially clear itself of the infection.
- Use only virgin bulls on heifers. Remove the bulls after three months of breeding. Examine heifers for pregnancy and cull all non-pregnant animals.
- Remove bulls from the adult cows after three to four months of breeding. Examine cows for pregnancy and cull all non-pregnant cows. In herds with split breeding seasons, (spring and fall), do not move non-pregnant cows from one herd to the other.
- Control campylobacteriosis (vibrio), another important venereal disease, by vaccination immediately before the breeding season.
- Use artificial insemination when practical (e.g., dairies and intensively managed beef operations).

Killed vaccines specific for *T. foetus* have been developed. Test trials indicate vaccination is capable of inducing an immune response earlier than that which occurs naturally in infected cows. Vaccination has been shown to be effective in reducing losses in reproductive efficiency that occur in *T. foetus* infected herds and can be used as an additional tool in controlling the disease.

Control strategies in an outbreak. Control strategies in an infected herd will vary widely based on a number of factors such as herd size, number of breeding groups, number of breeding seasons, etc. If trichomoniasis has been diagnosed in your herd, you should work with your veterinarian to design a control strategy that will be most effective given your particular situation.

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