Trichomonosis Review

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What causes Trichomonosis? A protozoan (a mobile, complex, single-celled organism), called *Tritrichomonas foetus* is the microbe that causes this condition. It is similar to - but not the same as - a venereal organism in humans called *Trichomonas vaginalis*. The cattle organism lives in the microscopic folds of the skin that line the bull's penis and internal sheath. As the bull gets older, this skin grows, and folds more and more, creating additional places where the organism can thrive. Therefore, older bulls (more than three years of age) harbor more of the "Trich" organism than younger bulls and therefore, pass it on to the cows and heifers more easily. In the cow or heifer, the organism lives in the cavity of the vagina and uterus until her immune system eventually destroys it. That destruction process (immunity) may not occur for 3-20 weeks. Also, the immunity is short-lived, so a cow or heifer can become infected again.

What are the signs or symptoms of "Trich" in cattle? Neither the cow nor the bull appears ill at any time when they are infected with this organism. The cow, after having been infected at breeding, may rarely show a very subtle, very mild vaginal discharge, 1-3 weeks later. Most of us would never notice it. The bull shows no indication that he is infected. So, there are no outward signs that the bulls, cows, or heifers are infected with "Trich".

What if Trichomonosis gets into my herd? If it is a *new* infection (that is, if your herd has never been infected before), you can expect a long, drawn-out calving season, with a disappointing total calf crop. In such herds, it is common to end up with a 70% (or less) calf crop, strung out over 3-8 months. If the herd has been infected for a long time, the effect may be slightly less. That is, a higher number of cows will get pregnant, but never as many as normally would calve if there were no "Trich" present. Because "Trich" often gets into a herd via the introduction of one infected animal, especially an infected bull, another scenario is possible. In this case, after the first year, the percentage of pregnant cows may fall from 95% to 90%, for example. In the second year, there may be a further, dramatic fall to 70% or less.

The reason for the open or late cows is the fact that the Trichomonosis organism causes the loss of the calf a few weeks into the pregnancy. A few cows in the herd (perhaps 5%) may actually abort due to "Trich", nearly always **before five months' gestation**. However, there are many causes of abortion, and Trichomonosis is just one, and a less common one at that. So don't assume that every abortion is a sign of "Trich". A few cows (perhaps another 1-2%) may develop **pyometra**, i.e., a heavy, pus-filled uterus, after being infected. A qualified veterinarian can detect this pyometra at pregnancy check time. Cows or heifers with pyometra **at the time of pregnancy check** (as opposed to after calving) should make you very suspicious about Trichomonosis.

Does the disease cause abortions? It can, but most cows do not abort a fetus big enough to find. Instead, they come back into heat at some extended interval (usually more than 21 days) after breeding. Most cows will eventually settle, if given enough time, but their immunity to the disease is weak. They can be reinfected the next season. What apparently happens when a "clean" cow is bred by an infected bull is that her egg is fertilized, but the disease organism either kills the embryo soon after conception, or the uterus' reaction to the "Trich" organism kills the embryo. In either case, the cow or heifer may not lose her "conceptus" until the end of the breeding season.

How is Trichomonosis transmitted? Trichomonosis is a **venereal disease** of cattle (all breeds). It is transmitted from cow to cow by a bull, so it is nearly always a disease of cattle that are naturally bred, as opposed to Artificially Inseminated (AI) cattle. Very rarely, it can be transmitted by contaminated semen or AI equipment, but this is highly unlikely if semen is purchased from reputable bull studs and hygienic artificial insemination methods are used. Like most venereal diseases, there is only one way to contract Trichomonosis...that is, by sexual contact with an infected mate. There are rare cases of a cow or heifer being infected by contaminated semen or AI equipment, but these are not generally important means of spreading the disease. Reputable AI studs take great pains to assure that their product (bovine semen) is free of *Tritrichomonas foetus.*

How common is Trichomonosis in cattle? Bovine trichomonosis has been--and continues to be an important cause of economic loss in cattle operations that use natural service. In the Western U. S., where extensive grazing (vs. intensive grazing on permanent pasture) management practices are employed, the disease is prevalent at surprisingly high rates. In 1990, a random survey of California beef cattle operations revealed that more than 15% of herds were infected (i.e., they had at least one infected bull). Several factors such as grazing association, renting or borrowing bulls, large areas of common fence lines, etc. favor introduction of "Trich" from one herd to another.

How can I tell if my herd has it? In spite of the fact that bulls don't show any signs, the organism is easier to find in bulls than in cows, because bulls become "carriers" while cows eventually shed the infection. Special culture media have been developed that can support growth of the organism in an incubator. Scrapings of preputial (internal sheath) fluids are taken, and placed in this medium, which is then cultured for up to a week. If even one bull is positive, you have to assume that the herd is infected.

Is the diagnosis a sure thing? No, but the technique used is quite good, as diagnostic tests go. Studies of known "positive" bulls have shown that the culture method may miss about 10-12% of infected bulls if we only test them once. But testing the **herd** (all the bulls in the herd) once gives us a 90% chance of finding the disease if it's there. If no infected bulls are found on the basis of a single culture of all bulls, then we can be about 90% sure that the bull herd is "clean". Repeat testing (up to three times, at weekly intervals) is necessary if we want to be 99% sure that the entire bull herd is negative. It's important to give the bulls 1-2 weeks' of sexual rest before beginning to test them for Trich. This allows time for the numbers of organisms to build up to a level that can be detected.

Is there a vaccine? Yes. Fort Dodge currently markets a vaccine made from killed whole cells of T. foetus. Tests of this vaccine have shown that experimentally infected, vaccinated females "clear" a vaginal infection in a matter of a few weeks, whereas control (unvaccinated) females

remain infected for months. As of this date, no efficacy for bulls has been shown, i.e. the vaccine has not been shown to protect bulls from becoming infected.

Is there a treatment for the bulls? Technically, ethically and legally, no. There is no FDA-approved treatment for "Trich" in cattle. Several years ago, some bulls were successfully treated with a poultry product, but the drug is not cleared for such use in cattle. Not only that, but the FDA has declared that the use of this poultry product in cattle is outright illegal.

What about the cows and heifers? Most studies have shown that the disease is **self-limiting** in the female, as opposed to the male, who can carry it for years. After several heat cycles, most cows and heifers clean themselves up, but this may take months. Research is showing that up to six months may be required in some cases, but 1-4 months is more common.

At pregnancy check time, non-pregnant females, especially those with reproductive tracts that the veterinarian declares "abnormal" (e.g. with pyometra) should be sold for slaughter. They might represent "carrier cows" that could maintain the disease in the cow herd even if the bulls were cleaned up.

Non-pregnant females with "normal" tracts may be kept over for rebreeding, if a "split" calving season is practiced, but they should not be mingled with the normal cows; nor should the same bulls breed both groups of cows.

How can I prevent Trichomonosis, if my herd's never had it and none of my neighbors have either?

1. Use young, fertile bulls (<3 years). Many studies have confirmed that younger bulls are less likely to transmit the disease.

2. Keep fences in good repair.

3. Before each breeding season, culture all bulls at semen exam time. (This is also a good time to vaccinate bulls for Vibrio (another venereal disease).

4. Be very suspicious of new cows or bulls, especially somebody else's cull. Keep the cowherd closed, and use only virgin and/or Trich-negative bulls whenever possible.

What do I do if my neighbor has "Trich"?

1. Use young, fertile bulls (<3 years).

2. **Keep fences in good repair. Use buffer pastures between your neighbor and your cowherd and bull battery.**

3. Before each breeding season, culture all bulls at semen exam time.

4. Be very suspicious of new cows or bulls, especially somebody else's cull. Keep the cowherd closed, and use only virgin and/or Trich-negative bulls whenever possible.

5. **Discuss with your veterinarian the possibility of vaccinating all females for Trich, twice at 1-month intervals, then annually. The best time to vaccinate is just a few weeks before the bulls are turned in, so that immunity is high at the time of possible exposure to the "bug".**

What do I do if I have "Trich" diagnosed in my herd?

1. Use young, fertile bulls (<3 years).

2. **Keep fences in good repair. Buffer pastures.**

3. **Send all bulls to slaughter OR test all bulls at least 3 times before the breeding season for "Trich". This will give you a 95-99% confidence these bulls are clean—not 100% confidence. In subsequent years culture all bulls for Trich before the breeding season at semen exam time.**

4. **Cull all cows that are going to calve late in the season OR put them into a separate herd that has no contact with bulls.**

5. **Vaccinate all females for Trich, twice at 1-month intervals, then annually before the breeding season.**