

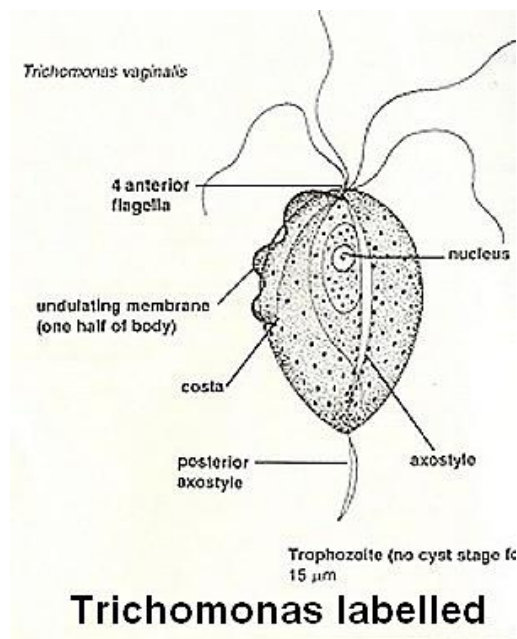
## Trichomoniasis

Trichomoniasis or trich is a sexually transmitted infection caused by the protozoan parasite called *Trichomonas vaginalis*. The disease is highly curable if a person seeks treatment. However, only about 30% of people with trich experience symptoms, according to the Centers for Disease Control and Prevention (CDC). Without treatment, trich can lead to complications. It can affect a pregnancy, and it also appears to increase the risk of getting and passing on HIV. Trichomoniasis is one of the most common sexually transmitted infections (STIs) in the United States, where the CDC estimate that it affects close to 3.7 million people. It is the most common curable STI.

Causative agent:

*Trichomonas vaginalis* is an anaerobic, flagellated protozoan parasite and the causative agent of trichomoniasis. It is the most common pathogenic protozoan infection of humans in industrialized countries. Infection rates in men and women are similar but women are usually symptomatic, while infections in men are usually asymptomatic.

Morphology



Unlike other parasitic protozoa (*Giardia lamblia*, *Entamoebahistolytica* etc.), *Trichomonas vaginalis* exists in only one morphological stage, a trophozoite, and cannot encyst. The *T. vaginalis* trophozoite is oval as well as flagellated, or "pear" shaped as seen on a wet-mount. It is slightly larger than a white blood cell, measuring  $9 \times 7 \mu\text{m}$ . Five flagella arise near the cytostome; four of these immediately extend outside the cell together, while the fifth flagellum wraps backwards along the surface of the organism. The functionality of the fifth flagellum is not known.

In addition, a conspicuous barb-like axostyle projects opposite the four-flagella bundle. The axostyle may be used for attachment to surfaces and may also cause the tissue damage seen in trichomoniasis infections. The nucleus is usually elongated, and the cytoplasm contains many hydrogenosomes.

While *T. vaginalis* does not have a cyst form, organisms can survive for up to 24 hours in urine, semen, or even water samples. A nonmotile, round, pseudocystic form with internalized flagella has been observed under unfavorable conditions. This form is generally regarded as a degenerate stage as opposed to a resistant form, although viability of pseudocystic cells has been occasionally reported. The ability to revert to trophozoite form, to reproduce and sustain infection has been described, along with a microscopic cell staining technique to visually discern this elusive form.

**Life cycle of *Trichomonas vaginalis*:**

- Life cycle of *T. vaginalis* is simple. It is completed in a single host either male or female.
- The infection is transmitted sexually from a woman acting as a reservoir of infection to man.
- In the female, the parasite gets nourishment from the mucosal surface of the vagina and from the ingested bacteria and erythrocytes.
- *T. vaginalis* reproduces by longitudinal binary fission.
- It begins by division of the neuromotor apparatus and finally separation of cytoplasm into two daughter trophozoites.
- Trophozoites are the infective stages. On sexual contact, trophozoites are transmitted to male and localize in the urethra and prostate gland.
- These trophozoites probably undergo replication in the same way as seen in the vagina in females.

***Trichomonas* has following virulence factors:**

- Protein liquids and proteases: They help in adherence of trophozoites to epithelial cells of the genitor-urinary tract.
- Lactic and acetic acid: it lower the pH of the vaginal fluid. The low pH of vaginal secretion is cytotoxic to epithelial cells

- Enzymes cysteine proteases: it is responsible for haemolytic activity of the parasite.

Mode of transmission:

- Venerally route by sexual contact with infected partners: It is the most common mode of transmission of infection in adolescents and adults.
- Occasionally non-venerally through fomites such as towels, toilet seats etc. and also from mud and water bath as well.
- By perinatal infection in some of female babies born to infected mothers during passage through the infected birth canal.

Symptoms:

Symptoms may appear between 5 and 28 days after exposure, or they may appear later or not at all. When symptoms are present, they can affect males and females differently. Minor symptoms include irritation, but someone with a more severe case may have inflammation with discharge.

Possible symptoms in females include:

- frothy, foul-smelling vaginal discharge, which may be clear, white, gray, yellow, or green
- vaginal discharge with blood
- genital irritation
- discomfort during sex or when urinating
- swelling in the groin
- frequent urination
- in rare cases, lower abdominal pain

Symptoms in males may include:

- discharge from the urethra or penis
- itching in the penis
- burning sensations after ejaculating or urinating
- frequent need to urinate
- pain when urinating

Complications:

Some of the complications of *T. vaginalis* in women include: preterm delivery, low birth weight, and increased mortality as well as predisposing to HIV infection, AIDS, and cervical cancer. *T. vaginalis* has also been reported in the urinary tract, fallopian tubes,

and pelvis and can cause pneumonia, bronchitis, and oral lesions. Condoms are effective at reducing, but not wholly preventing, transmission. *Trichomonas vaginalis* infection in males has been found to cause asymptomatic urethritis and prostatitis.

Diagnosis: Trich symptoms are similar to those of other STIs. It can't be diagnosed by symptoms alone. Anyone who thinks they may have acquired trich should see a doctor for a physical exam and laboratory tests.

A number of tests can diagnose trich, including:

- cell cultures
- antigen tests (antibodies bind if the *Trichomonas* parasite is present, which causes a color change)
- tests that look for *Trichomonas* DNA
- examination of samples of vaginal fluid, urethral discharge, or urine under a microscope

Treatment:

Infection is treated and cured with metronidazole or tinidazole. The CDC recommends a one-time dose of 2 grams of either metronidazole or tinidazole as the first-line treatment; the alternative treatment recommended is 500 milligrams of metronidazole, twice daily, for seven days if there is failure of the single-dose regimen. Medication should be prescribed to any sexual partner(s) as well because they may be asymptomatic carriers.