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## **Cancer-Inducing Mechanisms of Representative Sexually-Transmitted Infection Pathogens**

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Abstract



PDF (429KB)

## Abstract

The causal organisms of the numerous sexually transmitted infections (STIs) may be bacteria, viruses, fungi or protozoa. Apart from the known STIs these organisms cause, along with their accompanying physical, psychological and social effects, these organisms have also been implicated in oncogenesis. Each pathogen has its unique mechanisms of action, however, one representative organism was examined for each of the groups of microbes that cause STIs, namely: viruses, bacteria, fungi and protozoa, to show their oncogenic association. The human papillomavirus, which causes genital warts, is associated with oropharyngeal, cervical, anogenital, testicular and prostate cancer by the actions of the E5, E6 and E7 oncogenes, which have different functions. *Chlamydia trachomatis*, the etiological agent of *Chlamydia* infection, is linked to lymphogranuloma venereum, trachoma, cervical, and ovarian cancers by squamous cell metaplasia, and by the inhibition of apoptosis factors: caspase 3 and mitochondrial cytochrome c; which consequently inhibits apoptosis. *Candida albicans*, the causal organism of thrush in the mouth and the vagina, could cause cancer by producing carcinogenic by-products, triggering inflammation, molecular mimicry, and induction of the TH17 response. *Trichomonas vaginalis*, the protozoon which causes trichomoniasis, is known to cause the influx of pro-inflammatory molecules: chemoattractant protein-1, interleukin-8, and leukotriene B4, d neutrophils, and IL-6, and this may play a role in carcinogenesis. Expression of the oncogenes PIM1, HMGA1, and COX-2 by *T. vaginalis* has also been associated with the onset of cancer. Vaccination, healthy lifestyles, a mutually-monogamous sexual relationship, completing treatment regimen, use of sterile medical equipment, and not sharing sharp or invasive materials, are recommended in prevention and control of the STI pathogens and consequently, the cancers they cause.

## Keywords

Sexually Transmitted Infections, Cancer, Oncogene, Inflammation

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