Human Papillomavirus
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Etiologic Agent:
The human papillomaviruses, from the Papillomaviridae family, are the causative agents of Human papillomavirus (6).

Transmission:
HPV can be transmitted through skin-to-skin contact or by engaging in vaginal, anal, or oral sex with an infected individual. It can be transmitted even if the infected person is not displaying any symptoms (8). In rare cases, HPV can be transmitted from mother to newborn during birth, which may result in the baby to have warts in the voice box or throat (1).

Reservoirs
Reservoirs of HPV are located on the skin or mucosal membranes such as the cervix, vagina, vulva, anus, urethra, and mouth. Humans are the only natural reservoirs but it can occur in other species as well (4).

General characteristics of MO (specific, include taxonomy)
Human papillomaviruses are from the Papillomaviridae family. These double-stranded-DNA viruses are round, non-enveloped capsids with icosahedral symmetry. They infect the body by entering through tiny cracks in the skin either in or around the vagina, anus, urethra, or skin, and then infect the basal layer of cells (6). These infected cells then replicate and start spreading the virus to other nearby cells. There are more than 60 different species of papillomaviruses, some types are classified as low risk HPVs, such as type 6 and type 11, while others are classified as high risk HPVs, such as type 16 and type 18 (6).

Key tests for identification
Women get pap smears every 3 years (or every year) to screen for the presence of abnormal cells from a cervix swab. If abnormal cells are present, a high-risk-HPV test is then done which detects if the HPV is high or low risk based on the genotype. There is no specific HPV test for men, but medical professionals can give a visual inspection of warts to determine HPV (1).

Signs and symptoms of disease
Most people infected with HPV are asymptomatic and may not even know they have it. However, sometimes there are very clear signs and symptoms, depending on the HPV type and the strength of the immune defense. The low risk HPVs cause genital warts or warts inside the mouth and throat, or on the skin, and are not associated with increased risk of cancer. The high risk HPV species can cause cervical cancer, and other genital, anal, and oral cancers in both women and men. The specific mechanisms by which HPV causes cancer is still unclear, but it is known that the abnormal cell growth accumulates and forms tumors, which can be cancerous (8).

Historical information
HPV was first discovered in 1972, where it was presented with a case of Skin cancer by Stefania Jabłońska in Poland (9).

Virulence factors
HPV contains the virulence factors of the E6 and E7 protein, two proteins that attack the tumor regulating genes, suppressing the body’s ability to inhibit tumor growth (5).
Control/Treatment:
There is no cure for HPV, however, in healthy individuals, it is likely that the immune system on its own can eventually overcome the virus after about 2 years (4).

Prevention/ Vaccine info, new trials
The best way to prevent getting HPV is by remaining abstinent. If sexually active, using condoms will reduce the risk of contracting HPV. There are also a few vaccines against certain types of HPVs. One of the most popular vaccines, Gardasil, protects against two of the most common high risk (16 and 18) and low risk (11 and 6) HPVs (2). Gardasil is a subunit vaccine that consists of dead, antigen fragments that stimulates the humoral immune response in order to provide protection against the virus later on. This vaccine is recommended for all girls and boys age eleven and twelve, and should be given in three doses over a six-month period (7). Cervarix is another HPV vaccine for women ages 9 -25 years old, and it also protects against HPVs type 16 and 18 (4).

Local cases or outbreaks (with incidence figures)
In 2014 was deemed the most common sexually transmitted disease in the US. There is an estimated 79 million people infected with HPV in the united states, and 14 million new cases arise each year (4).

Global cases or outbreaks (with incidence figures)
In the world 99% of cervical cancer cases are due to HPV, and 70% of cervical cancers cases are due HPV type 16 and 18 (3).

Works Cited