

# The Prevention of Cervical Cancer and Other HPV-Related Diseases of the Anogenital Region

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Cervical cancer is the fourth most common cancer in women and the seventh most common cancer, with an estimated amount of 528,000 new cases worldwide in 2012. The majority of cases occur in less developed regions where the estimated 2012 age-standardized incidence rate was more than 30/100,000. These regions include eastern, southern and central Africa and Melanesia. The lowest incidence rates were registered in Australia, New Zealand and western Asia. Concerning mortality, about 266,000 deaths resulted from the malignancy in 2012, from which around 87% occurred in the less developed regions [1].

Cervical cancer is due to HPV infection [2], just like numerous other pathologies of the anogenital region e.g. genital warts, vulvar and vaginal cancer, anal cancer and penile cancer [3]. The virus is transmitted sexually, however transmission is also possible through non-penetrative sexual contact (for example hand to genitals) [4,5] or vertically [6,7].

The estimated average lifetime probability of HPV infection is more than 80% for women and above 90% among men [8]. While HPV infection is mostly acquired in adolescence, two peaks of prevalence had been detected: the first one in the twenties and the second infection peak in middle-age (46-50), however the prevalence varies by virus types and region [9]. Studies have shown that 90% of infections of a particular type clear out within two years [10].

Based on their malignant potential, HPVs can be identified as high-risk and low-risk types. Low-risk HPV types include types 6, 11, 42, 43 and 44, while high-risk HPV types include types 16, 18, 31, 33, 34, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68 and 70 [11]. In case the infection of a high-risk HPV strain persists, progression to precancerous lesions may occur. HPV-16 and HPV-18 types are responsible for approximately 70% of cervical cancers, while HPV-6 and HPV-11 cause about 90% of genital warts [12].

Currently three prophylactic vaccines have been licensed and are recommended for immunization: the bivalent (types 16 and 18), the quadrivalent (types 6, 11, 16 and 18) and the 9-valent HPV vaccine (types 6, 11, 16, 18, 31, 33, 45, 52 and 58). Vaccination can be started at age 9 and continued through age 26, however it is recommended for routine vaccination at age 11 or 12 [13]. The vaccine can also be beneficial for men, especially for high-risk populations such as men who have sex with men (MSM) [14].

While the prophylactic vaccine may be an effective tool of reducing cervical cancer incidence, the regular attendance of cervical cancer screening (secondary prevention) remains a primordial element of diminishing incidence and mortality.

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