



## Cervical Cancer: Prevention and Management

*A Comprehensive Review*

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**Abstract:** Globally, cervical cancer ranks as the fourth most common kind of cancer. It is mostly caused by HPV strains. With a healthy immune system, it might take 15 to 20 years for HPV infection to proceed to cervical cancer. Early detection and treatment depend on this time frame. Medical practitioners employ screening methods such as Pap smears, HPV testing, and Visual Inspection with Acetic Acid (VIA) to identify precancerous lesions and lower the risk of morbidity and mortality from cervical cancer. The effectiveness of VIA is still up for discussion, despite the fact that it is thought to be a more affordable and economical form of therapy. The first line of prevention should be HPV immunization. Certain vaccines, such Cervarix, Gardasil, and Gardasil 9, are essential for protecting against oncogenic HPV strains and significantly reducing the risk of cervical cancer. Radiation therapy or chemotherapy are two possible treatments for patients with cervical cancer. In more extreme cases, laser therapy or therapeutic hysterectomy are used. A healthier diet can also help meet immune function demands, although supportive treatment is still necessary to maximize patient results. Dietary control and nursing are also crucial. Although cervical cancer can be treated in a variety of ways, the main causes of treatment success variations include wide variations in healthcare systems, as well as the accessibility of cervical cancer screening and vaccinations

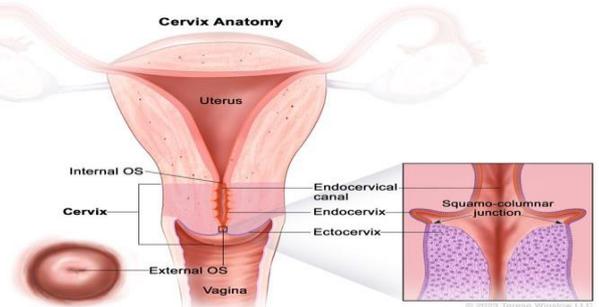
**Index Terms** - Cervical Cancer, Human Papillomavirus (HPV), Cervical Cancer Screening, HPV Vaccination, Cancer Prevention and Management

### Introduction

Cervical cancer is the fourth most common cancer in women, with a worldwide age-standardized incidence of 13.1 per 100,000 women in 2018. Cervical cancer is essentially a preventable disease and affects more than 250,000 women in low and medium HDI (Human Development Index) countries every year (GLOBOCAN, 2020).

### Cervical cancer

Cervical cancer develops in the tissues of the cervix (the organ that connects the uterus and the vagina). It is generally a slow-growing malignancy that does not cause symptoms but can be detected with frequent Pap screenings. Cervical cancer is virtually invariably caused by human papillomavirus (HPV) infections.



The cervix, the lowest portion of the uterus that attaches to the vagina, is where cervical cancer starts when cells start to grow out of control. A chronic infection with specific strains of the common sexually transmitted virus known as human papillomavirus (HPV) is the main cause of this uncontrollably growing tumor. Upon infection by high-risk HPV strains, the viral genome may get integrated within the host cellular genome, leading to the generation of cervical neoplastic cells, which proliferate to form cervical intracellular neoplasia (CIN), also called squamous intracellular neoplasia

(SIN) or, in simple terms, precancerous lesions, which can be graded into CIN1, CIN2 and CIN3 in increasing order of dysplasia. CIN1 is also referred to as low-grade squamous intracellular neoplasia (LSIN) as the lesions are often transient and self-limited which do either regress within a short span or do not progress to higher stages, while CIN2 and CIN3 are grouped under high-risk SIN (HSIN), represented as CIN2+, due to increased risk of the lesions to develop into invasive cervical cancer. This progression from CIN to invasive cervical cancer often takes 15-20 years in women with normal immune response and about 5-10 years in women with diminished or compromised immune response, which provides an excellent window for early detection of HPV infected precancerous lesions and prevention of their progression into invasive cervical cancer. The majority of HPV infections go away on their own, but occasionally the virus lingers and can cause cancer.

Regular screening is essential since cervical cancer frequently exhibits no signs in its early stages. As the illness worsens, symptoms like these could appear: - Pelvic pain - Unexplained vaginal bleeding (such as bleeding during periods, after sex, or after menopause) - Discomfort during sexual activity. The common risk factors of cervical cancers are early age at first sexual intercourse or first childbirth, repeated child birth, multiple sex partners, High-risk sex partners, family history, sexually transmitted infections, long term use of contraceptive pills, smoking, immuno deficiency diseases, poor sexual hygiene.

### Screening of cervical cancer

Screening by various techniques has been investigated as a potential strategy to reduce this burden. Frequent screening exams such as HPV testing, Pap smears and VI (Visual inspection) which look for precancerous cells. Early detection of these alterations is possible with routine screening procedures such as HPV testing, Pap smears and VI which check for precancerous cells. Precancerous diseases can be identified and treated before they become cancer, which increases the likelihood of a favorable outcome and increases survival rates. Screening strategies are expected to detect early stages and reduce progression to invasive cervical cancer and associated mortality.

An alternative to the previously described techniques is VIA (Visual Inspection with Acetic Acid), which involves covering the cervix with 5% acetic acid. The acetowhite lesions that result from this procedure may then be seen with the unaided

eye, suggesting a precancerous lesion. Because VIA is straightforward, quick to use, and requires less training, it is more operationally practical; yet, its efficacy in lowering invasive cancer and mortality is questionable (WHO, 2012). South India's rural regions demonstrated that VIA is secure and efficient in environments with minimal resources. The impact of VIA screening on the incidence and death of cervical cancer, however, has been the subject of inconsistent findings in earlier randomised controlled trials. While some trials have failed to demonstrate a substantial decrease in mortality following VIA screening, others have. The impact of VIA screening on the incidence of cervical cancer is comparable. A comprehensive examination of all evidence on relevant outcomes of screening by VIA is warranted. Therefore, we conducted this systematic review to assess the effectiveness of VIA based cervical cancer screening on mortality and cervical cancer incidence.

Screening programmes implemented across the continents constitute a strategy to identify the infection or precancerous lesions in their early stages, where the treatment modalities ensure complete eviction of the infection or lesions, causing an overall reduction in the incidence and mortality as a result of cervical carcinoma, which has been depicted by a promising decline in the cases and deaths of cervical neoplasm over the years by about 50-70% in various developed countries where this strategy has been adapted.

### Prevention of cervical cancer

The major preventive strategy for cervical cancer is HPV vaccination. There are three HPV vaccines currently available in the market; the bivalent vaccine Cervarix, the quadrivalent vaccine Gardasil, and the nonvalent vaccine Gardasil 9. The preliminary targets of HPV vaccination programmes are girls aged 9-14 years old with a 2 Dose schedule, Girls and women over 15 years are advised to receive a 3 Dose schedule. All three vaccines protect against types 16 and 18, which have a high oncogenic burden, and are responsible for about 60- 70% of all cervical cancers. The non-valent vaccine Gardasil 9 has coverage against 5 more high-risk HPV strains and can prevent upto 80-90% of cervical cancers. The HPV vaccines have proven to be safe and highly beneficial to induce strong direct or cross-immunity protection against HPV. With the recent advancements and development of these vaccines, there is scope to almost completely eliminate cervical cancer

among immunized women, especially in the context of continued cervical cancer screening programs and wide population vaccine Coverage.

Various prevention methods are inoculating cervical cancer-preventing vaccine (HPV Vaccine), HPV Vaccine-**Create antibodies against infection**, practice safe sex (Using condoms), limiting number of sexual partners, avoid Partners who participate in high risk sexual activities, getting regular pap smears, annual pelvic examinations, quit smoking.

### Management of cervical cancer

**Medical management:** Chemotherapy is the use of medications to destroy cancer cells. Drugs used in chemotherapy is cytotoxic. Radiotherapy is a treatment for cervical cancer that uses high-energy radiation to kill cancer cells or stop them from growing.

**Surgical management:** In laser surgery a narrow beam of intense light destroys cancerous and precancerous cells. Hysterectomy is a Surgery to remove the uterus, including the cervix.

**Nursing management:** Education should be given regarding importance of Well-balanced diet, Maintenance of fluid and electrolyte balance, HPV vaccine and regular cancer screening, Treatment and follow up care.,meticulous skincare patient is on radio therapy.

**Dietary management:** Flavonoid rich foods are apple, blackbeans, broccoli, Brussels, sprouts, cabbage, garlic, onion, soya and spinach. Food rich in folates are carrots, sweet potatoes and pumpkin are rich in vitamin A.

### Conclusion

The disease is preventable by screening, early diagnosis and treatment. Effective educational program regarding prevention and management of cervical cancer will help the women to live normal life and thus preventing the development of cervical cancer.

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