

## PREVENTION OF CERVICAL CANCER

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### ABSTRACT

*Cervical cancer is a major cause of morbidity and mortality among women worldwide, particularly in low- and middle-income countries. However, it is largely preventable through early detection and vaccination. Preventative strategies, including regular screening (Pap smears and HPV tests) and vaccination against the human papillomavirus (HPV), play a critical role in reducing the incidence of cervical cancer.*

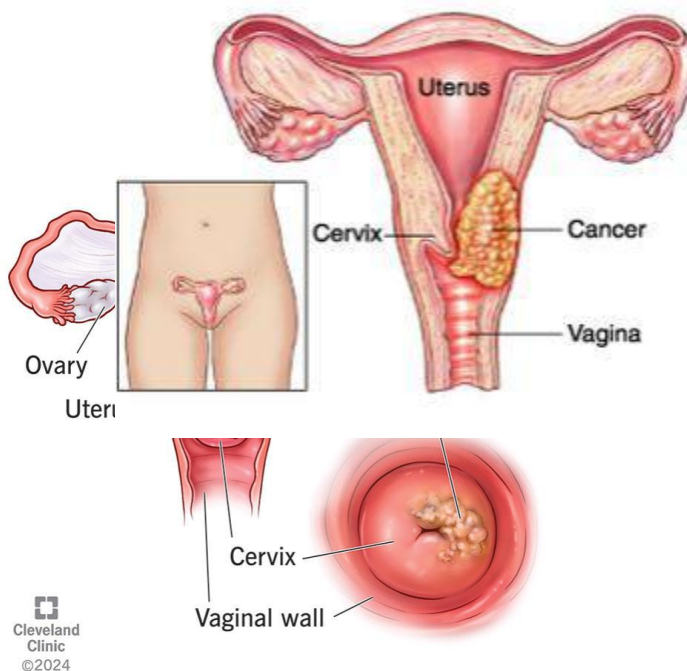
**Keywords:** Cervical cancer, Prevention, HPV vaccination, Pap smear, HPV screening, Early detection, Public awareness, Women's health, Cancer prevention.

## INTRODUCTION

Cervical cancer remains a significant global health concern, ranking 14<sup>th</sup> among all cancers and 4<sup>th</sup> among women’s cancers worldwide. Primary prevention and screening are crucial in reducing the burden of cervical cancer. In developed countries, screening efforts focus on detecting high-risk human papillomavirus (HPV) lesions through HPV testing and Pap smears. However, disparities exist in screening rates, particularly among low socioeconomic and minority populations. Barriers to screening include lack of awareness, fear, and cultural factors. Vaccination, available since 2006, is a vital tool in preventing cervical cancer, especially in populations with limited access to screening.<sup>[1]</sup>

## DEFINITION

- “Cervical cancer originates in the cells of the cervix, specifically the lower portion of the uterus that opens into the vagina.”<sup>[2]</sup>
- “Cervical cancer is a slow-developing disease that typically starts with abnormal cell growth, known as dysplasia, before progressing to a malignant tumor that originates in the cells of the cervix.”<sup>[3]</sup>



## INCIDENCE

Cervical cancer ranks as the fourth most prevalent cancer among women worldwide. In India, cervical cancer ranks second among causes of cancer-related deaths in women, comprising a quarter of global fatalities from the disease. The age-adjusted incidence rate in India stands at 22 cases per 100,000 women annually<sup>[4]</sup>

## CLASSIFICATION

There are three main types of cervical cancer, each originating from different cell types:

1. Squamous cell carcinomas: The most common type, typically developing in the transformation zone of the exocervix.
2. Adenocarcinomas: This type arises from the mucus-producing gland cells in the exocervix.
3. Adenosquamous or mixed carcinomas: A rare type, characterized by a combination of features from both adenocarcinomas and squamous cell carcinomas.[5]

## ETIOLOGY

While the exact causes of cervical cancer are still unclear,

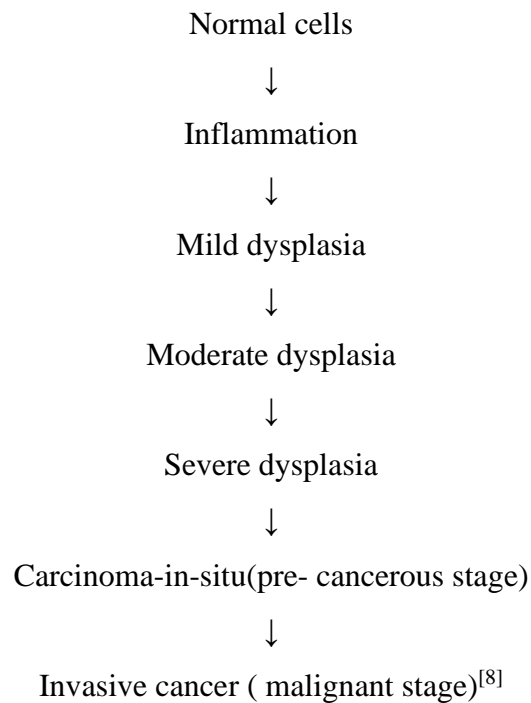
- Human Papillomavirus (HPV) infection: A sexually transmitted disease linked to cervical cancer
- Early sexual activity : which may increase the risk of HPV transmission
- Having multiple sexual partners :which raises the risk of contracting HPV and other STDs
- Long-term use of birth control pills : which may slightly increase cervical cancer risk
- Smoking : A known risk factor for various types of cancer
- Weakened immune systems: Such as those with HIV/AIDS, which may increase susceptibility to cervical cancer<sup>[6]</sup>
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## RISK FACTORS

Several factors can increase a woman's risk of developing cervical cancer, including :

- Poor genital hygiene
- Smoking
- Multiple pregnancies
- Oral contraceptive pills
- Weakened immune system
- Having multiple sex partner
- Early marriage.
- Human Papillomavirus (HPV) infection
- A weakened immune system
- Prolonged use of birth control pills
- Initiating sexual activity at a young age
- A history of sexually transmitted infections (STIs)
- A family history of cervical cancer
- A diet lacking essential nutrients.<sup>[7]</sup>

## **PATHOPHYSIOLOGY**



## **CLINICAL MANIFESTATIONS**

- Vaginal bleeding
- Pelvic pain
- Swelling in one leg
- Weight loss
- Odorous discharge from vagina
- Abnormal vaginal bleeding (after sex, between periods, or after menopause)
- Unusual vaginal discharge (watery, strong odor, or bloody)
- Pelvic pain or painful sex
- Bowel or urinary difficulties (painful or bloody)
- Back pain
- Leg swelling
- Abdominal pain
- Fatigue.

## **DIAGNOSTIC EVALUATION**

- Physical examination and medical history
- Pelvic examination
- Pap smear (Pap test)

- Human Papillomavirus (HPV) test
- Endocervical curettage (sampling of cells from the cervix)
- Colposcopy (visual examination of the cervix)
- Biopsy (removal and examination of cervical tissue)

## COMPLICATIONS

- Severe flank pain
- Blood in the urine (hematuria)
- Kidney failure due to bladder involvement
- Blockage of the ureters
- Abnormal vaginal bleeding between periods or after menopause
- Formation of an abnormal connection between the bladder and vagina (vesicovaginal fistula)
- Uterine enlargement
- Heavy menstrual bleeding (menorrhagia)
- Vaginal dryness and narrowing
- Swelling in the legs and feet (lymphedema)
- Premature menopause.

## TREATMENT

A multidisciplinary team, led by a gynaecologic oncologist, collaborates to provide personalized care for cervical cancer patients. Treatment plans are tailored to individual needs, considering factors such as:

- Disease stage
- Age and overall health
- Future family planning desires

### **The treatment options for cervical cancer include:**

1. Radiation therapy
2. Chemotherapy
3. Surgery
4. Targeted therapy
5. Immunotherapy

## PREVENTION

If detected early on, cervical cancer is very treatable and highly preventable. The HPV vaccine, regular cervical cancer screening, and adequate follow-up care when necessary could prevent almost all cervical malignancies.

HPV vaccination : Cervical cancer can be prevented safely and effectively with HPV vaccination.

Cervical cancer screening : Regular screening is still needed because the HPV vaccination does not protect against all HPV strains that might cause cervical cancer.[9]

### **Primary prevention of cervical cancer involves several strategies, including:**

- Educating the public about the disease and its risk factors
- Encouraging lifestyle changes, such as reducing the number of sexual partners and quitting smoking
- Promoting the use of barrier contraceptives, like condoms
- Implementing HPV vaccination programs for young girls (9-12 years old) using bivalent and quadrivalent vaccines
- Establishing regular cervical screening programs to detect abnormal cell changes early on.

### **Secondary Prevention:**

- Regular cervical screening using Pap smears to detect abnormal cell changes
- Colposcopy and directed biopsy to examine suspicious areas
- Treatment of cervical intraepithelial neoplasia (CIN), a precancerous condition
- Follow-up appointments after CIN treatment to ensure the condition doesn't recur

### **Tertiary Prevention:**

- Management of complications arising from cervical cancer, such as pain, bleeding, and organ damage, to improve quality of life.

## CONCLUSION

Cervical cancer continues to disproportionately affect women in low-resource settings, with HIV infection significantly increasing the risk of cervical cancer and precancerous lesions. To address this, alternative screening methods like HPV testing are essential for improving coverage and targeted interventions. Community engagement and partnerships are also vital. While current HPV vaccines are highly effective, implementing vaccination programs in developing countries remains a significant challenge, emphasizing the need for continued efforts and support.<sup>[18]</sup>

This analysis supports current guidelines for cervical cancer screening, including the age range and

frequency.<sup>[9]</sup>

The study found that:

- Screening every 3-5 years provides a good balance between benefits and burden.
- Co-testing (HPV and cytology) is efficient, especially when considering colposcopy burden.
- HPV testing followed by cytology for HPV-positive women may be a promising approach.

Overall, the study suggests that current screening recommendations are effective and that co-testing and HPV-based strategies warrant further research.<sup>[10]</sup>

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