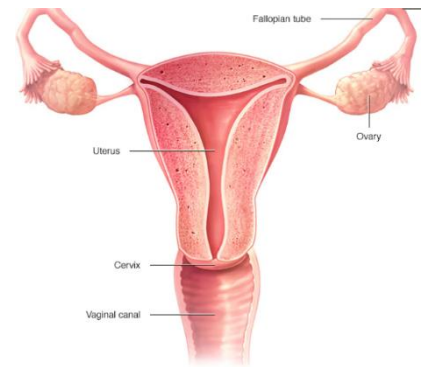


## What is Cervical Intraepithelial Neoplasia (CIN)? A Patient Guide

### What is CIN?

Cervical intraepithelial neoplasia (CIN) is a precancerous condition in which abnormal cells grow on the surface of the cervix. The cervix is the opening between the vagina and the uterus in women. “Intraepithelial” means that the abnormal cells are present on the surface (epithelial tissue) of the cervix. The word “neoplasia” refers to the growth of new cells. Another name for CIN is cervical dysplasia.



It is important to remember that most people with CIN do not get cancer. If cancer does form, it takes years to develop, giving doctors time to find and remove problem areas.

### What are the classifications of CIN?

Cervical intraepithelial neoplasia may be classified according to how much epithelial tissue is affected:

- *Low-grade neoplasia (CIN 1)* refers to dysplasia that involves about one-third of the thickness of the epithelium.
- *CIN 2* refers to abnormal changes in about one-third to two-thirds of the epithelial layer.
- *CIN 3* (the most severe form) describes a condition that affects more than two-thirds of the epithelium.

### What are the symptoms of CIN?

CIN does not usually cause any symptoms. Abnormal cells are found only after a routine Pap smear.

### What causes CIN?

CIN usually occurs after a woman becomes infected with the human papilloma virus (HPV). This is a virus that is spread through sexual contact. In many cases, the immune system by itself will get rid of the virus. There are over 100 strains of HPV. Some strains, such as HPV-16 and HPV-18, are more likely to infect the reproductive tract in women and cause CIN.

It is thought that more than 75% of women who are sexually active are infected with HPV at some point in time. About 50% of the HPV infections occur in women between the ages of 15 and 25. Most of the time, the infections go away without causing any permanent problems.

We do not know exactly why some women develop CIN after being infected with HPV. Some high-risk strains of HPV and the duration of the infection may play a role. Other risk factors include:

- A woman's age
- Smoking cigarettes
- Using immunosuppressant drugs

Factors that make the immune system weaker and raise the risk of HPV infections include:

- Having sex with multiple partners
- Becoming sexually active before age 18
- Becoming infected with the human immunodeficiency virus (HIV)

## How is CIN diagnosed?

Since CIN usually does not cause any symptoms, a Pap smear is needed to find abnormal cells. If the Pap test is unclear or abnormalities are found, the next step might be a colposcopy to examine the cervix and surrounding structures under a microscope. See “What is Colposcopy?” Handout.

## How is CIN treated?

Treatment will depend on various factors, including the severity of CIN, the patient’s age and her general medical condition, and the preference of the patient and her doctor. Procedures to treat the cervix can affect the ability to have children, so women should discuss various options with their healthcare providers.

In the case of low-grade CIN, treatment usually is not required. In the majority of these cases, the condition resolves itself. Only about 1% of cases of low-grade CIN progress to cervical cancer. A healthcare provider may choose a conservative approach that calls for periodic Pap smears to monitor any changes in abnormal cells.

In the case of moderate and severe CIN, treatment focuses on the removal of abnormal cells that might become cancerous.

Removal (resection) procedures include:

- **Loop electrosurgical excision procedure (LEEP)**—This technique uses a small, electrically charged wire loop to remove tissue, which is sent for further analysis. It may be used to treat severe CIN. About 1% to 2% of patients may experience complications following the procedure, such as delayed bleeding or narrowing of the cervix (stenosis).
- **Cold knife cone biopsy (conization)**—This is a surgical procedure in which a cone-shaped piece of tissue containing the lesion is removed. It is reserved for specific cases. Conization can provide a sample of tissue for further testing. It has a somewhat higher risk of complications, including cervical stenosis and postoperative bleeding.
- **Hysterectomy**—Removing the uterus may be an option in cases where CIN persists or does not improve after other procedures are utilized.
- **LASER vaporization**—This technique uses a special LASER device to burn off the abnormal cells. No tissue is removed or cut out. This is only indicated in certain patients.

Most of the time, cases of CIN can be treated successfully. Ablation and resection are effective in about 90% of all cases, with a 10% chance of recurrence of CIN after treatment. It only rarely progresses to cancer, and when it does progress, it does so very slowly.

The risk of recurrence is highest during the first 2 years after treatment. Patients are advised to have follow-up Pap tests every 6 months for 1 to 2 years after treatment. After that, they may resume having yearly Pap smears.

## How can CIN be prevented?

**Practice abstinence or use condoms when having sex**—The human papilloma virus, which is the leading cause of CIN, can be transmitted through sexual contact, including hand-to-genital or oral-to-genital contact as well as direct genital contact. The only way to effectively prevent HPV infections is by not engaging in sex. Use of condoms can reduce the risk of HPV infections, but they are not totally effective.

**Vaccinations against HPV**—The Food and Drug Administration has approved a vaccine called Gardasil® that is effective against the 9 types of HPV that are most closely linked to CIN.

**Have regular Pap tests**—Women should have their first Pap test at age 21. If the Pap tests remain normal, the current recommendations are for a repeat Pap every 3 years from ages 21 to 70. Pap tests cannot prevent cervical intraepithelial neoplasia, but they are beneficial because they can detect it in its earliest stages.

Handout References: [cancercareontario.ca](http://cancercareontario.ca), [myclevelandclinic.org](http://myclevelandclinic.org), [mayoclinic.org](http://mayoclinic.org)