

# Human Papilloma Virus

**The smear test aims to detect any changes in the cells that line the cervix that could be caused by a human papilloma virus (HPV). HPV is very common.**

Regular cervical screening is very effective in detecting cell changes at an early stage when treatment is straight forward, and in many cases the immune system will deal with the virus before it is even detected. However, if a virus is allowed to persist, it can lead to serious infection, and even, eventually, to cancer.

## Causes of HPV

HPV is a Sexually Transmitted Infection (STI), but unlike other STIs, it can be found anywhere in the genital area and therefore can be spread by genital-to-genital contact, regardless of the exchange of bodily fluids. This means that condoms do not fully protect against HPV. Any sexually active person is at risk of contracting HPV, and it is thought to be most prevalent in young people, aged 16-25. While research shows that limiting the number of sexual partners can help to reduce this risk, it is important to remember that HPV is widespread and does not imply multiple partners.

Other lifestyle factors can also influence the ability of your immune system to fight against HPV such as smoking, a poor diet and certain medications.

Smoking has been shown to reduce the efficacy of disease-fighting cells in the cervix, and the chemical benzpyrene, which is thought to induce cancer, has been found in the cervix of women who smoke. A poor diet also weakens the immune system, making it more likely for HPV to recur. Research has also linked the Pill to an increased risk of cervical cancer, but this increase is small and regular cervical screening should pick up on any related problems.

## What is HPV?

HPV exists in over 100 different subtypes which are classified by number. Most forms are relatively harmless, causing common warts (subtypes 1, 2 and 4) and genital warts (subtypes 6 and 11). These are known as 'low-risk' types and do not lead to cancer. Often, HPV goes undetected because there are no external symptoms, and only a small percentage of people who contract it develop warts. Warts can be treated through drugs, directly applied chemicals, freezing, or surgical removal.

However some forms, in particular HPV 16 and 18, are known to cause changes in cervical cells which can lead to cancer. These are known as 'high-risk' types. It can take up to twenty years for cancer to develop, preceded by the long duration of a pre-cancerous disease, known as CIN (see below).

## A new vaccine

In October 2006, a vaccine was launched in the UK that can prevent cervical cancer, pre-cancerous cervical viruses and genital warts. The vaccine targets the four types of HPV (6, 11, 16 and 18) that account for the majority of genital disease. The vaccine was approved for use in the USA in June 2006, and gained a European license in September. It is currently available for private purchase and will soon be available on the NHS.

Another HPV vaccine is also expected to be licensed late in 2007, which protects against the two strains of HPV that most commonly lead to cervical cancer (16 and 18).



## **Cervical Intraepithelial Neoplasia (CIN)**

### **What is CIN?**

CIN is caused by the persistent infection of high-risk HPV subtypes. It is not a cancer but a 'preinvasive' disease, in which a group of malignant cells (called a lesion) has formed but has not yet invaded surrounding tissues and other parts of the body. In the name 'Cervical Intraepithelial Neoplasia', 'neoplasia' indicates an abnormal growth, and 'intraepithelial' indicates the position of the growth in between layers of cell tissue.

CIN is usually categorized into grades which signify the proportion of abnormal to normal cells and correlates to the risk of progression to invasive cancer. Grade 1 signifies a low risk of cancer: most low grade CINs resolve themselves within a relatively short space of time. However, grades 2 and 3 imply a greater proportion of abnormal cells and a higher probability of eventual cancer.

### **Diagnosing CIN**

If a smear test confirms the presence of abnormal cervical cells you may be referred to a clinic for a further examination, called a colposcopy, in order to decide whether you need treatment. The examination is very simple, and similar to a smear. The vaginal walls are held open with a speculum, but instead of taking a sample of the cells, the doctor examines the cells from a distance using a non-penetrative microscope. If you wish, you can choose to follow this examination on a screen, called a colposcope. For more information on the smear test and colposcopy, please see our related fact-sheet 'The Smear Test'.

### **CIN treatments**

CIN can, over a period of years, develop into cancer, but treatment of early lesions is simple and effective. There are two forms of treatment, known as 'ablative' and 'excisional'. Ablative therapy aims to destroy the pre-cancerous cells, while excisional therapy aims to remove them. Where CIN is identified as high-grade, there is a possibility that ablative treatments will not be adequate to eliminate all the abnormal cells. In this case, an excisional treatment will be advised. Both methods take about fifteen minutes.

### **Cryotherapy**

Cryotherapy is an ablative technique which aims to destroy the neoplastic cells through thermal shock. It is effective in up to 95% of cases. The cells are frozen to a temperature of -20°C and then slowly thawed. Often this cycle is repeated to ensure that all the abnormal tissue is destroyed.

As for a colposcopy, the vaginal walls are held open with a speculum in order to give a clear view of the cervix. An instrument called a cryoprobe is inserted into the vagina and the tip makes contact with the lesion of abnormal cells. The probe is made of highly conductive metal which transfers the drop in temperature to the target cells. This drop is brought about by releasing a refrigerant gas (nitrous oxide or carbon dioxide) from a compressed gas cylinder into the probe. Local anaesthetics are not usually administered for this procedure, although you may feel some discomfort when the speculum is inserted and some women experience mild cramps or a pain similar to a bee-sting when the refrigerant gas is applied.

Following this treatment up to six weeks are needed for healing. During the first month, women might experience a watery discharge, and they should avoid using tampons or having sex. It is thought that cryotherapy might increase the transmissibility of HIV, and so the use of condoms is advised. A follow-up appointment should be made for 9-12 months after the treatment to assess the regression or persistence of the cancerous lesion.

### **Loop electrosurgical excision procedure (LEEP) or LLETZ (large loop excision of the transformation zone)**

LEEP is an excisional technique that has the advantage of preserving the extracted tissue for further examination. A small electric current is applied to a thin wire around the periphery of the affected tissue, causing the cells to separate and be cut away. This process is painless, but a local anaesthetic ensures that there is no discomfort. However, the injections of anaesthetic into the cervix can cause some transitory pain.

The vaginal walls are held apart with an insulated speculum. A very thin wire loop electrode is attached to a generator and inserted into the cervix. The loop is adjusted to cover the area of the lesion, which it then cuts away and removes.

This process can cause bleeding, and so gauze is applied to the vagina to facilitate healing and should not be removed for several hours. Following the treatment, it is normal to experience a brown or black discharge for up to two weeks. However, if moderate to severe bleeding occurs the patient should contact the clinic immediately for further help. It is not advised to use tampons or have sex for one month following treatment. Another appointment should be made for 9-12 months' time, in order to monitor healing and to check that no new lesion has formed.

This factsheet has been produced by Women's Health Concern and reviewed by members of our Medical Advisory Panel.

It is for your information and advice and should be used in consultation with your own medical practitioner. **Review date: September 2009.**

## Useful contacts

### **The Family Planning Association**

Helpline: 0845 319 1334 (open Mon-Fri 9-6)

Website: [www.fpa.org.uk](http://www.fpa.org.uk)

### **Well Being of Women (WoW)**

Website: [www.wellbeingofwomen.org.uk](http://www.wellbeingofwomen.org.uk)

### **Jo's Trust**

Tel: 01327 341965

Website: [www.jotrust.co.uk](http://www.jotrust.co.uk)

## Glossary

**Cervix** The 'neck' of the womb that connects with the vagina.

**CIN (Cervical Intraepithelial Neoplasia)** A pre-cancerous abnormal growth in the cervical tissues.

**Colposcopy** A visual examination of the cervix using a non-penetrative microscope.

**Cryotherapy** A technique to destroy malignant cells through a sharp drop in temperature.

**HPV (Human Papilloma Virus)** A very common sexually transmitted virus of which some subtypes cause common warts, and others can lead to more serious pre-cancerous conditions.

**LEEP** A technique to extract malignant cells from the cervix using a very small electric current.

**Lesion** A formation of pre-invasive abnormal cells.

**Speculum** A small tool used to open the vaginal walls to facilitate cervical examination

## Sources

**International Agency for Research on Cancer (IARC)**

[www.iarc.fr](http://www.iarc.fr)

**Cancer Backup**

[www.cancerbackup.org.uk](http://www.cancerbackup.org.uk)

**Cancer Research UK**

[www.cancerresearchuk.org](http://www.cancerresearchuk.org)

**NHS direct**

[www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)

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