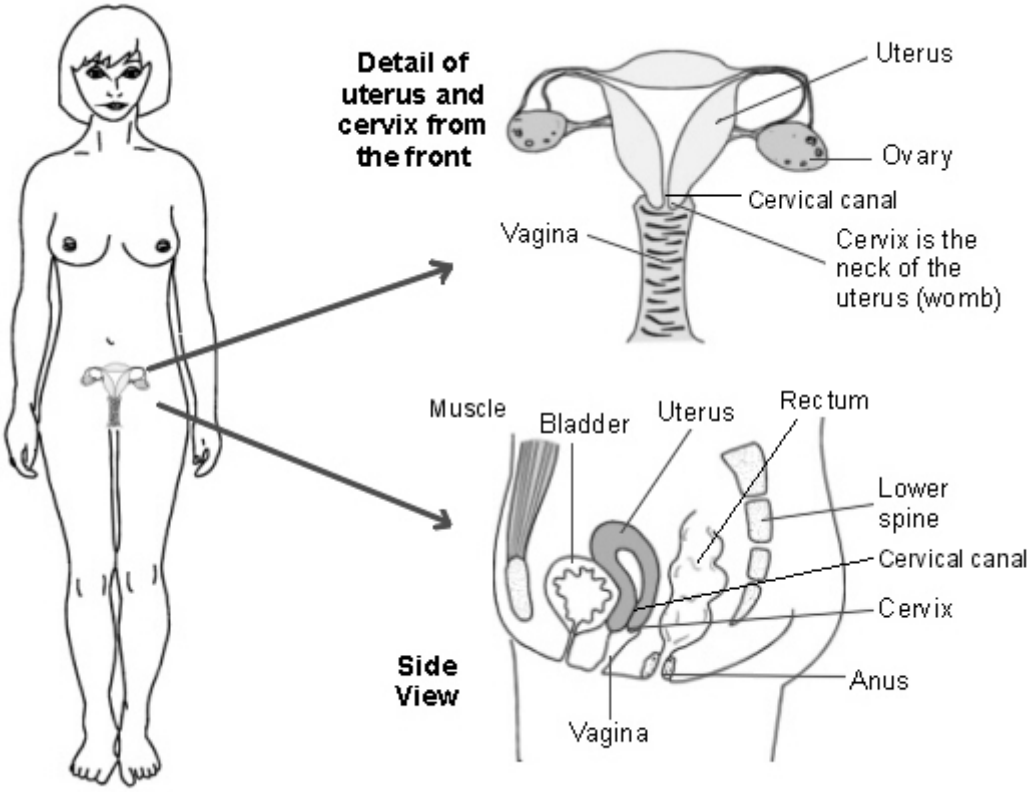
Cervical Screening Test

Women are routinely invited to have regular cervical screening tests as part of the **National Cancer Screening Programme**. The tests are done to *prevent* cervical cancer (and not to *diagnose* cancer as some people wrongly think). During each test some cells are removed from the cervix with a plastic brush. The cells are examined under a microscope to look for early changes that, if ignored and not treated, *could* develop into cancer of the cervix. If abnormal cells are found, these can be treated (removed), during a procedure called **colposcopy**.

What is a cervical screening test and how is it done?



The cervix is the lowest part of the uterus (womb). It is often called the neck of the womb.

You will be asked to remove your clothing from the waist down. If you wear a loose skirt, you may only need to remove your knickers. You will be asked to lie on your back on the examination couch. You should bend your knees, put your ankles together, and let your knees fall open. A doctor or nurse will put an instrument called a speculum into your vagina. This gently opens the vagina and the cervix can be seen at the top of the vagina.

Cervical screening tests are not painful, although some women find the speculum a little uncomfortable. It generally helps if you can relax - this makes the experience better for you and easier for the person taking the sample. The newer disposable plastic specula are also a lot less cold than the older metal ones!

The cervix looks a bit like a doughnut when viewed end-on through a speculum. There is a central opening called the os. The cervix is tubular and the os leads into a tunnel called the cervical canal. This then opens into the uterus.

A cervical screening test involves taking a sample of cells from your cervix. The cells are taken from an area of the cervix called the transformation zone (TZ), also called the squamocolumnar junction (SCJ). This area marks the divide between the cells that line the uterus - called columnar cells, and the cells of the cervix - called squamous cells. At this meeting point, the cells are continually dividing and growing. This means there is more chance of the cells here developing abnormalities that could become cancerous. In young women this area is generally easy to see. The surface of the cervix is normally shiny, smooth and pale pink in colour. The columnar cells that line the uterus and the cervical canal are reddish and more grainy in appearance.

A thin plastic stick with a small brush at the end is used to remove some cells gently from the surface of the cervix. The brush has plastic bristles which are longer in the middle. These bristles are placed into the cervical os. As the brush is rotated round 360°, the shorter bristles splay out and remove cells from the TZ on the surface of the cervix. The brush is rotated around the cervix five times, in a clockwise direction. This is because the bristles have a cutting edge that only works when rotated clockwise. This procedure is not painful. The cells on the brush are then sent to the laboratory.

In older, postmenopausal women, the TZ may be more difficult to see. Often this is because it has been drawn up into the cervical canal. The cervix is also often much smaller. For these women, a different shaped brush (called an endocervical brush) is used to reach the cells in the cervical canal.

What is liquid-based cytology?

LBC is a way of preparing the cervical samples for examination in the laboratory. It has now replaced the traditional smear test in the UK.

Two systems for LBC are in use. Both systems use brushes which look similar. In one, the head of the brush that contains the cells is broken off into a pot that contains special preservative liquid. The brush head is sent to the laboratory in the pot (this is the SurePath® brand method). In the other system, the brush is rinsed in the preservative to wash the cells into the pot. The brush is then discarded (this is the ThinPrep® brand). In both methods, the procedure to obtain the cells is the same. It is just how the cells on the brush are dealt with that is different between the two methods. The liquid is sent to the lab where it is spun to separate out the cells from the preservative and other material such as mucus and blood. The cells are then placed on a slide and examined under a microscope.

LBC is now the preferred technique for cervical screening as it is more likely to produce a good set of cells that can be examined under the microscope. With the older smear method, about 1 in 10 tests had to be repeated because cells were not seen clearly or too few cells were present. This was often because of mucus and blood that was also smeared on to the slide. LBC is overall a more reliable test. A repeat test is much less likely to be needed with LBC (about 2 in 100). The LBC slides are easier to examine, speeding up time in the laboratory. This leads to faster results for women.

LBC also gives the opportunity to perform other tests on the same specimen. Tests for human papillomavirus (HPV) are possible on an LBC sample. HPV has been shown to cause cancer of the cervix (cervical cancer). (See separate leaflet called *'Cancer of the Cervix'* for more information.)

Scientists are currently investigating whether adding HPV testing to the LBC specimen helps doctors to decide who needs treatment and more frequent cervical screening - and, who can have tests less frequently.

Doctors and nurses will still commonly refer to cervical screening tests as smear tests when talking to patients. From a patient point of view it really makes no

practical difference how the cells are collected from the cervix; the main part of the examination, using the speculum, is the same.

What is a smear?

You may still hear cervical screening referred to as a smear test or Pap smear. This is because of the way the test *used* to be performed. The traditional smear test involved removing cells from the cervix with a small wooden spatula. The cells were then smeared on to a glass slide (hence the name cervical *smear*). The slides were then examined under the microscope in a similar way to now. This method was the one used for many years. (Pap was a shortened form of Papanicolaou - named after the Greek doctor who invented the test.) This method is no longer used for cervical screening in the UK.

Why are cervical screening tests advised?

Cervical cancer is often a disease that can be prevented. Early changes can be seen in the cervix, which indicate that cancer may develop.

Cervical screening tests sample some cells from your cervix. These are examined under the microscope in a laboratory.

Cervical screening tests are not cancer tests. They are designed to detect early abnormalities of the cervix which, if untreated, could lead to cervical cancer in the future.

In most women the cells (and therefore the cervical screening test) are normal. Abnormal cells are found in some women. An abnormal result does **not** mean cancer in the vast majority of cases. Abnormal cells indicate that cancer **may** develop sometime in the future. About 1 woman in 20 will have an abnormal result that requires further testing or treatment. Most of these changes will **not** lead to cervical cancer. Treatment can be given to prevent cancer from developing in women with abnormal cells. So, the test aims to **prevent** cancer, and not to detect cancer. Early detection and treatment can prevent cancer developing in 3 out of 4 women.

The NHS Cervical Screening Programme

The NHS Cervical Screening Programme invites all women for regular tests automatically. You need to be registered with a GP, as this is how the programme gets your name. It is therefore important that your GP has correct address details for you.

A computer system is used. Your record on the computer is updated when you have a test so it knows when your next one is due. You should get a letter asking you to make an appointment to have a test when it is due. Computerised recall systems are good - but not foolproof. Contact your GP if you think you should have had a cervical screening test but have not yet received an invitation to have one.

Cervical screening is a free service on the NHS. Depending on which country you live in, you may be called at different ages for cervical screening:

- First invitation for screening in England is at age 25. It is age 20 in Scotland, Wales and Northern Ireland.
- Routine recall (repeat screening test):
    - Age 25 years: first invitation to cervical screening in England.
    - Age 25-49 years: cervical screening tests are every 3 years. In Scotland, Wales and Northern Ireland cervical screening is 3-yearly from age 20.
    - Age 50-64 years: cervical screening tests are every 5 years.
    - Age 65 years: routine cervical screening ceases.

- Women over 65 years of age should be screened if:
    - They have not had a cervical screening test since the age of 50.
    - A recent cervical screening test has been abnormal.
- Cervical screening does not stop simply due to age until a woman with a previously abnormal cervical screening test has had 3 negative results.

Why is the cervical screening test important?

Cervical cancer is not uncommon. In recent years the number of cases has fallen due to cervical screening tests. However, there are still over 2,000 new cases of cervical cancer diagnosed each year in the UK. Most of these occur in women who have never had a screening test, or who have not had one for many years. Cervical cancer can be prevented if you have regular screening tests. It is estimated that up to 3,900 women are prevented from developing cervical cancer every year in the UK due to cervical screening.

Where do I go for a cervical screening test?

Most women have the test at their GP practice. It is usually done by the practice nurse. You can have it done at a family planning clinic if you prefer. A copy of the result is usually sent to you, your GP and the health authority - called the primary care trust (PCT). This can take up to 6-8 weeks. Since LBC was introduced, waiting times for results are falling, so you might find out your results much more quickly. Ask at your GP practice for the result of the test if you have not had it by this time.

What do the results of the cervical screening test mean?

Cervical screening tests examine a sample of cells from the cervix. They cannot examine all of the cells. Cell results are called cytology - hence, liquid based cytology (LBC). Cervical cytology results are reported as:

- Normal.
- Inadequate.
- Abnormal. Of which there are several grades or degrees of abnormality:
    - Borderline.
    - Mild dyskaryosis.
    - Moderate dyskaryosis.
    - Severe dyskaryosis.
    - Invasive or glandular neoplasia.

Normal result
About 9 in 10 routine cervical screening tests are normal. You will be sent a letter inviting you for another one in 3-5 years, depending on your age.

A normal result means you have a very low chance of developing cervical cancer. It is not a guarantee that cervical cancer will not occur.

No screening test is 100% accurate. Some tests will be falsely reassuring (so called false negative results) - where the test is reported as normal but an abnormality is present. This is why it is important to have tests regularly. Cervical cancer takes years to develop from the earliest abnormalities, so there should be plenty of opportunity to detect abnormalities before problems do develop. (It is also possible to have false positive results. This means that a result is incorrectly labelled as abnormal. This can cause a lot of worry, but usually the colposcopy examination will reveal that things are normal.)

Inadequate test
This sometimes occurs, but is far less common now that the LBC technique is used. About

2 tests in every 100 are inadequate and need to be repeated. Inadequate simply means no result can be given as not enough cervical cells were present for examination under the microscope. It might be that the laboratory can only see cells from the vagina or columnar cells from the endometrium, or that there were just too few cervical cells. In the unusual event that a woman has three inadequate tests in a row, the National Cervical Screening Programme advises that she be referred on for colposcopy examination (see later section). (See separate leaflet called *'Colposcopy'* for more information.)

Abnormal result
About 1 in 20 tests is reported as abnormal. There is a range of changes that may occur. **In nearly all cases, these changes do not mean cancer**.

Dyskaryosis is a medical term used to describe abnormal cell changes, seen with cervical screening. Dyskaryosis is not cancer. About 9 out of 10 cases of dyskaryosis revert back to normal on their own, without treatment. Nearly all abnormal tests show no more than small changes in the cervical cells.

Dependent on the degree of abnormality, women with abnormal results may:

- Have a repeat cervical screening test at a shorter time interval.
- Be referred to a gynaecologist or to a colposcopy clinic - for further examination of the cervix +/- treatment. The urgency of this referral depends on the actual result of the cervical screening test.

Borderline change
Borderline change is the mildest abnormality seen on cervical screening. About 3-4 in 100 cervical cytology results are borderline. Whilst the cells are not quite normal, they are not abnormal enough to be categorised as dyskaryosis.

Mild dyskaryosis
Mild dyskaryosis is a common abnormal result from cervical screening. About 2 tests in every 100 show mild abnormalities of the cervical cells. Most of these changes go back to normal without any treatment.

Moderate or severe dyskaryosis
For even fewer women, cervical screening will show moderate or severe dyskaryosis. About 6-7 in every 1,000 smear tests show either of these abnormalities. If your smear shows moderate or severe dyskaryosis it is still very unlikely that you will have cervical cancer. The main difference is that these changes are less likely to return to normal by themselves, so you will probably need some treatment. Treatment will happen at colposcopy.

Invasive or glandular neoplasia
Less than 1 cervical screening test in 1,000 has one of these, more serious abnormalities. Neoplasia means new growth of cells. Invasive neoplasia on a smear suggests cervical cancer *might* be present. This is *not* proven until a sample of cervical tissue (a biopsy) has been taken at colposcopy.

Glandular neoplasia is another significant abnormality that can be seen on cervical screening. It suggests that there is an abnormality in the lining of the womb (the endometrium), rather than on the cervix. This is because glandular cells (found lining the womb) are different to the ones normally found on the cervix. Glandular neoplasia again does not necessarily mean cancer, but cancer needs to be excluded. You will probably need to have colposcopy and may need to have a small camera passed into the womb (called hysteroscopy).

It is important to remember that it is rare for an actual cervical cancer to be found on cervical screening. Remember that screening is designed to find early changes that *could* become cancer in the future, if left untreated.

What is colposcopy?

Colposcopy is a more detailed examination of the cervix. In this test a speculum is gently put into the vagina so the cervix can be seen. This part is exactly the same as for a cervical screening test. The doctor (or specialist nurse) uses a magnifier (colposcope) to look at the cervix in more detail. The actual colposcope does not go inside your vagina. A liquid is used to paint the cervix which shows up the abnormal cells. It takes longer than a normal cervical screening test (about 15 minutes). It is usually done in a specialist colposcopy clinic at hospital. During colposcopy it is usual to take a small piece of tissue from the cervix (biopsy) to make a more detailed assessment of the cells.

You may be referred for a colposcopy if you have one of the higher grades of abnormality on your smear test (usually moderate/severe dyskaryosis, invasive or glandular neoplasia). You may also be referred for colposcopy if you have had three inadequate or borderline results in a row or if you have had three abnormal results (of any grade) within a 10-year period.

The laboratory that reports the cervical screening results will determine what action needs to be taken (based on the current result and your past results). Either the laboratory will refer you directly to colposcopy, or they may ask your GP to make this referral. You should contact your GP if you have any questions or worries about your result, or the colposcopy examination (although you would usually be sent an information leaflet too). The leaflet dealing with colposcopy (mentioned above) provides more information.

Can abnormal cells be treated?

Yes. A minor abnormal change often goes away by itself. This is why a repeat test after 3-12 months may be all that is needed. If the cells remain abnormal, or the changes are more marked, then treatment is offered. This will stop cancer from developing in the future. Treatment, if needed, is simple and virtually 100% effective.

Some common questions about the cervical screening test

How effective is the cervical screening test?
The test is about 80% effective. This means that for every 10 women who would have developed cancer of the cervix, about 8 cases can be prevented. So, although it does not detect an abnormality every single time one occurs, overall it is a reliable test.

I have never had sex. Do I need a cervical screening test?
The test is recommended for all women - even if you have never had sex. However, the risk of getting cervical cancer is very low if you have never had sex. This is because the main cause of cervical cancer is a past infection with the human papillomavirus (HPV) - a type of wart virus. HPV is a common virus that is normally passed on by having sex. There are other, less common types of cervical cancer, not caused by HPV, so women who have never had sex are still at risk. (See separate leaflet called *'HPV Immunisation'* for more information and also the leaflet dealing with cervical cancer.) You may decide that you do not want to have a test if you have never had sex.

I am a homosexual woman. Do I need a cervical screening test?
Yes. If you are a homosexual (lesbian, gay) woman, you are still advised to have cervical screening. This is because there is still a risk of cervical cancer, and HPV can still be transmitted between partners. Additionally, some homosexual women may have had sexual contact with a man in the past.

I have had a hysterectomy - do I need to have a cervical screening test?
This depends on the type of hysterectomy, and why it was done. Your doctor will advise you on this. In general, if you have a total hysterectomy (removal of the uterus and cervix) for a

reason not due to cancer, then you no longer need cervical screening tests. Some types of hysterectomy leave the cervix (called subtotal hysterectomy), and some are done to remove a cancer. In these situations, a test of the cells of the remaining cervix, or of the top of the vagina (called the vault), may still be advised.

Does the cervical screening test really save lives?
Yes. By studying the statistics of cancer cases since the tests began it is estimated that between 1,100 and 3,900 cases of cervical cancer are prevented each year in the UK.

Why don't women in England get called from age 20?
Women in England are no longer offered cervical screening below the age of 25 years. This is based on a consensus of opinion of experts who have looked at all the evidence. The main reasons behind this are:

1. Cervical cancer is extremely rare in women under 25 years of age.
2. Abnormal cervical screening test results are very common in women under the age of 25.
3. Many of these changes seen revert back to normal without any treatment.
4. Cervical screening in these much younger women can do more harm than good. Women may be very anxious and worried about abnormalities that eventually resolve anyway. Also, there is the potential for harm to occur as we might end up overtreating these women. This would mean removing cells from the cervix earlier than was needed, perhaps without waiting for the problems to resolve spontaneously.

But, what is really important (in England), is that women, especially sexually active women, do not miss their first invitation for cervical screening at age 25. Otherwise there is the potential (especially if the woman has been sexually active since her teenage years) for abnormalities in the cervix to progress and become potentially more serious. So, the main risk of starting the screening programme in England at age 25, is that some women might miss their first invitation.

Wouldn't it be better to have yearly smear tests?
No - yearly cervical screening is not recommended for most women. This is because cervical cancer takes a long time to develop. The early changes that can occur in cervical cells often improve without treatment anyway. More frequent screening would be expensive for the NHS, would neither identify nor prevent any more cancers, and could cause physical or psychological harm to women - through over-treatment or anxiety. More frequent cervical screening is therefore not a cost-effective use of resources.

Some women will need to have more frequent cervical screening or colposcopy, after abnormal results or cervical treatment. This is an extremely important part of follow-up. Your doctor will advise you how often you need to be recalled.

Can I have my cervical screening test or colposcopy when I am having my period?
It is best to have your cervical screening test when you are not having your period (menstruating). Ideally the test is best performed mid-cycle. With the new LBC technology you can have the test done at any time but, if you are bleeding heavily, there may be too much blood and mucus on the brush, meaning too few cells from the cervix are removed.

Similarly, it is probably best to delay your colposcopy examination if your period starts. It is not impossible to perform colposcopy when you are menstruating, but it can make it difficult to get a good view. You should ring up the clinic where you have your appointment to check whether they would prefer you to reschedule or not.

Can I have cervical screening when I am pregnant?
If you are due your routine cervical screening test and you are pregnant, this should be deferred until after your baby is born. Usually it is advisable to wait until you are at least 12 weeks postnatal. This gives the cervix a chance to recover from pregnancy and childbirth. Tests performed earlier are more likely to be inadequate.

If you have had an abnormal cervical screening result and have been invited for colposcopy, it is important you attend, even if you are pregnant. Colposcopy can be safely carried out on pregnant women. As long as no major problems are found, treatments will probably be delayed until after you have had your baby. Sometimes repeat colposcopy may be done later in pregnancy. It is possible to give treatment to the cervix, if it is essential, whilst you are pregnant.

I have got irregular bleeding - do I need to have a cervical screening test straightaway?
No. **Cervical screening is a routine test performed on women without any symptoms** of anything being wrong. The aim is to look for problems in cervical cells that could become cancer in the future. A cervical screening test would **not** be used as an investigation for irregular bleeding (but you should still attend for your cervical screening test when invited).

Bleeding after having sex (called postcoital bleeding), bleeding between periods (called intermenstrual bleeding) and bleeding after the menopause (called postmenopausal bleeding) are abnormal symptoms and need to be investigated (but not with a cervical screening test). If you have any of these symptoms you need to see your GP.

I am a transgender man - do I need cervical screening?
If you were born female and have had a sex change, you need only have cervical screening if you have retained your cervix. If you have had a total hysterectomy (with removal of the cervix), you do not need to attend for screening.

I have HIV infection - do I need to do anything differently?
Women with HIV infection should ideally have cervical screening and colposcopy when their disease is diagnosed. Current recommendations are to have a cervical screening test every year. This is because HIV increases your risk of developing cervical cancer.

Does being immunosuppressed increase my risk of cervical cancer?
Yes - women who are immunosuppressed are at an increased risk of CIN. Immunosuppressed means your immune system is dampened down. This may be because of certain diseases or drugs. The main groups affected are:

- Women with human immunodeficiency virus (HIV) - the virus that causes AIDS. These women need yearly cervical screening (see above).
- Women who have had a kidney transplant. However, it is not recommended that these women have more frequent cervical screening - just that early referral to colposcopy is advisable with any abnormal screening results.

Women taking cytotoxic drugs for rheumatological disorders, immunosuppressive drugs after other transplants, chemotherapy for cancer, steroids or tamoxifen have not been shown to be at increased risk.

The future of cervical screening

The **Sentinel Implementation Project** is being run by scientists interested in the usefulness of HPV testing on LBC samples taken for routine cervical screening. It is being carried out at 6 centres in England. HPV tests are being done on two groups of women:

1. Women who have a borderline or mild dyskaryosis result on cervical screening. This is being called HPV triage. The idea is to reduce the number of repeat tests a woman needs to have, and to reduce the anxiety of being called for colposcopy unnecessarily. Both of these cause women a lot of worry. Only about 1 in 5 of these women ends up needing treatment for abnormal cells. The idea is to test these women for HPV. If a woman does not have a high-risk strain of HPV (that is, a strain proven to be associated with the development of cervical cancer), she is very unlikely

to need treatment. These women could continue with routine screening. Women found to have high-risk strains of HPV would have immediate colposcopy.
2. Women who have had treatment for CIN at colposcopy. Here the HPV testing would be a test for cure. After treatment, a repeat cervical screen would be performed, and tested for abnormal cells (as routine) and HPV. If both tests were negative (ie, no abnormal cells and no HPV), women could return to the normal screening programme (instead of needing yearly smears for 10 years).

The separate leaflets (mentioned above) dealing with cervical cancer and HPV immunisation provide more information.

In summary

The take-home message is: you are very unlikely to develop cervical cancer IF ... you have regular cervical screening tests at the times advised by your doctor, AND ... you have treatment when advised if abnormal cells are detected.

Further sources of information

Cancer Research UK - Cervical Cancer
This site gives information on cervical screening, treatments for abnormal cervical cells, diagnosis of cervical cancer and its treatment.
Web: www.cancerhelp.org.uk/type/cervical-cancer/

Cervical Screening Programmes:
England - www.cancerscreening.nhs.uk/cervical/index.html
Wales - www.screeningservices.org.uk/csw/pub/index.asp
Northern Ireland - www.cancerscreening.n-i.nhs.uk/cervical/toc.html
Scotland - www.fightcervicalcancer.org.uk/cervical-cancer/benefits.aspx

References

- Cervical screening, Clinical Knowledge Summaries (October 2010)
- NHS Cervical Screening Website
