Promoting Cervical Screening
Information for Health Professionals

Further investigations, treatments and new technologies

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1. Introduction

This section describes the different types of investigations a woman may have if she has an abnormal Pap smear result and treatment options currently available for cervical abnormalities and cervical cancer.

2. Further Investigations

If a woman receives an abnormal Pap smear result, she may be referred to a specialist for further investigations. The investigations usually include a colposcopy and sometimes one or more biopsies are taken. Information about these investigations and how they are performed is addressed below:

2.1 Colposcopy

A colposcopy gives a magnified view of the cervix. An instrument called a colposcope is used, which is like a microscope on a stand. It usually takes about 15 minutes and is a similar procedure to a Pap smear. It is not an operation and no anaesthetic or hospital stay is necessary.

The doctor will be a specialist in this area of practice and is skilled at finding any areas of concern by looking at the cervix through the colposcope. Pregnant women can have colposcopies. However, it is important the woman informs the doctor that she is pregnant prior to the procedure.

As with a Pap smear the woman is required to undress from the waist down and asked to lie on her back. The doctor inserts a speculum into the vagina to hold the vaginal walls apart. A solution is applied to the cervix to highlight any abnormal looking areas and sometimes a biopsy is taken during the procedure. The biopsy is sent to a pathology laboratory to be examined and the results are usually available within 1-2 weeks.

Some colposcopes have a special TV screen which can be watched by the woman if she wishes. Some women may like to have a family member/friend or health worker present during the procedure. It is possible to organise this by talking to the clinic staff and the doctor who'll be performing the procedure.
2.2 Biopsy

During a colposcopic examination, a punch or target biopsy may be taken from an abnormal looking area of the cervix. A biopsy involves the collection of a small piece of tissue which is removed with a special instrument and sent to a laboratory for examination. The procedure may be a little uncomfortable.

A punch biopsy or target biopsy can cause some bleeding, light spotting or other discharge, but will usually heal quickly. If the bleeding or discharge continues for more than two or three days, or if the bleeding is heavy the woman should return to see the doctor. Women can experience some pain afterwards which is similar to menstrual cramping, that can be relieved with painkillers. If pain persists the woman should seek medical advice. A definite diagnosis is not made until the results of the biopsy are received.

3. Treatments

Once all the biopsy results are available, the doctor can suggest treatment if necessary. The type of treatment used depends on the abnormality, whether cancer is present. It will also depend on the age of the woman and her general health. Treatments may include local surgery, more extensive surgery (eg. hysterectomy), radiation therapy, chemotherapy or a combination of these treatments.

3.1 Cone Biopsy

A cone biopsy is used to remove a cone shaped area of tissue from the cervix. Sometimes this procedure removes all of the abnormal cells and no further treatment is needed. In other cases, it may show the cells have spread into the cervix and further treatment will be necessary. This procedure is performed in hospital under a general anaesthetic. It is common for women to experience some bleeding and/or cramping for a short while after the cone
biopsy. Women are advised to avoid sexual intercourse and tampons for two to three weeks so the cervix can heal without risk of infection. If any unusual symptoms or concerns arise the woman should be advised to see her doctor.

Diagram of cone biopsy

3.2 Laser treatment
With this method, abnormal cells are destroyed using heat from a laser beam. This can be done in the doctor’s surgery or at the hospital. For this procedure a local anaesthetic may be used and it will take 20 – 30 minutes to complete. Sometimes a general anaesthetic is advised. If this is the case a one day hospital stay is necessary. Healing usually occurs quickly after laser treatment and bleeding is minimal. Most women return to normal activities within a few days of treatment. Some vaginal discharge may occur up to four weeks.

3.3 Diathermy
This is another method of destroying abnormal cells using heat. It is often carried out under general anaesthetic and will require a day in hospital. It can also be done at the doctor’s surgery or in the outpatient’s clinic of the hospital using a local anaesthetic. It is a less common method of treatment.

3.4 Cryotherapy
This is a method of destroying abnormal cells by freezing. No anaesthetic is required and the treatment can be performed in the doctor’s surgery or in the outpatient’s clinic of the hospital. It is a less common method of treatment.

3.5 LLETZ (Large Loop Excision of Transformation Zone)
The abnormal cells are scooped from the cervix with a wire loop in this method of treatment. It is often carried out under general anaesthetic and will require a day in
hospital. It can also be done at the doctor's surgery or in the outpatient's clinic of the hospital using a local anaesthetic. It is a common method of treatment.

### 3.6 Hysterectomy

A hysterectomy is the removal of the uterus by surgery. There are two kinds of hysterectomy that may be performed, a total hysterectomy or a radical hysterectomy. In a total hysterectomy, the uterus including the cervix is removed. The ovaries are usually not removed in women who are still having periods. In a radical hysterectomy, the cervix, ovaries and fallopian tubes, supporting ligaments and top part of the vagina are removed. Lymph node examination and dissection may also be performed during a radical hysterectomy for cervical cancer.

### 3.7 Lymph Node Dissection

This is also known as lymphadenectomy. It is a surgical procedure in which some or all of the lymph nodes in the groin are removed. This is often performed at the time of radical hysterectomy. A common side effect of this procedure can be leg swelling (lymphoedema).

### 3.8 Radiation Therapy

Radiation therapy is the use of x-rays to destroy cancer cells. Radiation therapy may be advised if a woman is not well enough for a major operation or to reduce the size of cancer before the surgery. Radiation therapy may also be used after surgery or combined with chemotherapy. This ensures that all cancer cells around the area that has been treated are destroyed.

Radiation therapy can be given in two ways: from outside or inside the body. Both external and internal radiation therapy is used to treat cervical cancer.

**External Radiation Therapy**

In external radiation therapy, the radiation is directed from a machine, called a linear accelerator at the cancer and surrounding tissue. For women with cervical cancer, this is the pelvic area. Like a normal x-ray, radiation therapy does not cause pain or discomfort as it is being given. Radiation therapy is usually given as an outpatient, five days a week for four to six weeks.

**Internal Radiation Therapy (Brachytherapy)**

In brachytherapy, a radioactive implant is placed into the vagina. This ensures that the healthy tissue around the affected area is spared. This method allows the exact dose of radiation therapy to be administered. The length of time the implant is left in position is very carefully measured. This procedure requires a general anaesthetic so the implant can be inserted through the vagina.

Radiation therapy may cause a number of side effects that are temporary and can often be controlled by medication. The side effects may include tiredness, depression, loss of appetite, diarrhoea, pain when passing urine and skin redness similar to sunburn. Side effects vary from person to person and cease a short time after the treatment has been completed.
3.9 Chemotherapy
Chemotherapy is the treatment of cancer using cytotoxic drugs. The aim is to kill cancer cells while doing the least possible damage to normal cells. The drugs work by stopping the cancer cells from growing and reproducing. Chemotherapy is usually given via an intravenous solution (through a vein). The length of time a woman will need to have chemotherapy will depend upon the type of tumour and how advanced it is.

The side effects of chemotherapy vary according to the particular drugs used. They may include feeling tired, nausea, vomiting, depression, and feeling “off colour”. Some thinning or loss of hair from the body and head may occur. These side effects are temporary, and medication can be taken to prevent or reduce some symptoms.

3.10 Palliative Treatment
Palliative treatment is treatment that relieves or soothes pain and other symptoms of illness and is used if the cancer has spread and treatment is not an option. It is a particularly important type of treatment for people with advanced cancer who cannot be cured as it helps to improve their quality of life by reducing pain and distress. Palliative care includes pain relief using painkilling drugs and other measures such as radiotherapy. General practitioners, specialists and specialist palliative care teams all play important roles in palliative treatment for people with advanced cancer.

4. Prognosis/Outlook
Precancerous cervical abnormalities are usually easily treated with minimal impact to a woman’s quality of life which is why regular cervical screening is so important. Cervical cancer when detected early can be effectively treated however if a woman is not having Pap smears it is less likely to be found at an early stage. For women with more advanced disease, treatment is more extensive although a cure may still be possible. Prognosis depends on the individual woman’s situation.

5. New Technologies
New technologies have been explored to automate cervical screening which has until recently remained largely a manual procedure in the Australian setting. Attempts to increase the sensitivity and automate cervical screening have led to the development of a number of new technologies. These include liquid-based cytology, such as ThinPrep® and SurePath® and automated screening devices, for example the Thin-Prep Imager® and FocalPoint®. Liquid-based cytology is not publicly funded in Australia at present as a review conducted by the Medical Screening Advisory Committee (MSAC) in 1998 determined there would be limited benefit and substantial cost involved in publicly funding these technologies given the effectiveness of the NCSP using the conventional Pap smear (Australian Health Technology Advisory Committee, 1998).
5.1 Liquid based cytology

Liquid-based cytology (LBC) whether ThinPrep® or SurePath® thinlayer technology is the production of a thin layer of cervical cells on a microscope slide, suitable for diagnosis of cytological abnormalities. These preparations can be screened manually or by automated screening which is supplemented by manual screening.

In the Private Sector, Liquid Based Cytology (usually ThinPrep in Qld) has an additional charge to the woman of approximately $30. There is no Medicare rebate (Cancer Council Victoria, 2006). In the public sector, liquid based cytology is offered free of charge to the woman if the criteria for an adjunctive test is met as stated in the ‘Queensland Health Policy and Protocol for the use of ThinPrep®’ (link).

5.2 Automated Screening Technology

The ThinPrep® Imaging System is an automated imaging and review system for use with ThinPrep® thin-layer slides. It combines imaging technology to identify microscopic fields of diagnostic interest with automated stage movement of a microscope in order to locate these fields. In routine use, the ThinPrep® Imaging system selects 22 fields of view for a Cytotechnologist to review. Following review of these fields, the Cytotechnologist will either complete the diagnosis if no abnormalities are identified or review the entire slide if any abnormalities are identified (Cytec, 2002).

FocalPoint™ Slide Profiler

The Focal Point™ Slide Profiler prioritises the slides based on the likelihood of abnormality to help cytotechnologists reduce the incidence of false negatives, by directing attention to slides most likely to contain abnormality.

In the private sector, these methods of computer-assisted screening have an additional charge to the woman of approximately $30. There is no Medicare rebate. Computer-assisted screening methods are not available to public sector clients in Queensland.

Optoelectronic Screening (TruScreen®)

TruScreen® is a relatively new Australian-developed device that is used in conjunction with the conventional Pap smear. The TruScreen® system consists of a portable console, a handpiece and a single use sensor. TruScreen® uses a probe to emit electrical and light signals onto the cervix. The sensor then measures the reflection and the computer analyses whether the cells are normal or abnormal. The TruScreen procedure takes an additional 1 – 2 minutes after the conventional Pap smear collection (Polartechnics).

TruScreen® is slowly being released onto the Australian market at an additional cost of approximately $35 to the woman. There is no Medicare rebate. The evidence in support of Truscreen® is somewhat variable. In the context of the National Cervical Screening Program there is no evidence to support TruScreen®use nor is there any obvious benefit to women who are having regular Pap smears (Singer et al, 2003).
5.3 HPV DNA TESTING

As mentioned earlier there is a well established link between cervical cancer and infection with HPV. A number of types of HPV (commonly referred to as high risk or oncogenic HPV) are associated with cervical cancer (primarily, HPV16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 68). A test is available to detect HPV, called an HPV DNA test. This test identifies if a woman has HPV and whether it is a high risk type of HPV or a low risk HPV. The test is usually collected at the same time as a Pap smear using the same or similar collection devices. This test is available in Australia but is quite expensive and is only subsidised by the government as a ‘test of cure’.

HPV DNA testing in Australia is recommended under the National Health and Medical Council (NHMRC) Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities who have had treatment for HSIL in order to identify those women who are at risk of further high-grade disease. (NCSP, 2005)

HPV DNA Test of Cure is only covered by Medicare for women with a biopsy-proven HSIL following treatment. For these women it is recommended that HPV DNA testing should be performed in addition to a Pap smear 12 months after treatment and then again annually with a conventional Pap smear until both tests appear normal on two consecutive occasions. Queensland Health has developed a Policy and Procedure for HPV DNA ‘Test of Cure’.

Additional applications of HPV DNA testing are to explored further in the Australian setting in view of the implementation of the National HPV Vaccination Program.

5.4 HPV VACCINATION

Vaccination against high-risk HPV types implicated in the development of HSIL and cervical cancer offers a broad population benefit. Results from large scale, multinational clinical trials have confirmed the extremely high efficacy of prophylactic HPV vaccines.(Fraser, Cox & Mayeaux, 2006; Lunec, 2005). Two vaccines have been developed to prevent HPV and cervical cancer. Gardasil (CSL) and Cervarix® (GSK) have been shown to prevent infection from two identified cancer causing strains of HPV, strain 16 & 18. Gardasil also offers protection for two other HPV strains,
strains 6 & 11. These strains are responsible for genital warts (Department of Health and Aging, 2007).


The National HPV Vaccination Program commenced in April 2007. As part of this program, the Commonwealth Government funds the National Immunisation Program for 12 to 13 years old girls, which is delivered through schools. GARDASIL® is the HPV vaccine used in the school based program. A catch up HPV vaccination program ran between 2007 and June 2009 for girls not at school and women between the ages 12 and 26 and was provided primarily through GP and community based clinics. HPV vaccination is not free for boys at this time. This is because further research into the benefits of boys is needed (Department of Health and Aging, 2007).

Gardasil is licensed for use in Australia for females aged 9 – 26 years and males aged 9 – 15 years. Gardasil is given as a series of three injections into the deltoid muscle over six months as follows:

- first dose – at a chosen date
- second dose – 2 months after the first dose
- third dose – 6 months after the first dose (Department of Health and Aging, 2007).

The HPV vaccine is recommended for girls before they become sexually active and protects against specific strains of HPV that cause around 70% of cervical cancers. The vaccine does not protect against all types of cancer-causing HPV16 The vaccine should be considered by all girls and women in the target group even if sexual activity has commenced. Girls aged between 12 and 26 years who have had sexual contact with one or two partners have a lower risk of exposure to HPV types 6, 11, 16 and 18, the types of HPV covered by the vaccine (Department of Health and Aging, 2007).

Cervarix® is indicated in females from 10 to 45 years of age for protection against HPV types 16 and 18 only (Department of Health and Aging, 2007). The primary vaccination course consists of 3 doses. The recommended vaccination schedule is:

- first dose – at a chosen date
- second dose – 1 month after the first dose
- third dose – 6 months after the first dose

If flexibility in the vaccination schedule is necessary, the second dose of Cervarix® can be administered between 1 month and 2.5 months after the first dose. The necessity for a booster dose has yet to be established.

Despite the HPV vaccine being an important medical discovery, it should not be seen as a replacement for Pap smears. Being vaccinated lowers the chances of becoming infected with the high risk HPV types contained in the vaccine. Women who have ever had sex need to continue with two-yearly Pap smears so any changes to the cells of the cervix can be detected and if necessary, treated in accordance with the NHMRC Guidelines for Asymptomatic Women with Screen Detected Abnormalities (NCSP, 2005). Reported side effects of the HPV vaccine include mild to moderate

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pain, redness and swelling at the injection site (Department of Health and Aging, 2007).

6. References


6.1 Additional Resources

Available from the Queensland Cancer Fund Phone: 13 11 20
The Cancer Council Queensland

- Understanding Cancer of the Cervix
- Understanding Radiation Therapy
- Understanding Chemotherapy
- Understanding Radiation Therapy. DVD available for loan
- Understanding Chemotherapy. DVD available for loan
Available from the Queensland Cervical Screening Program
Queensland Cervical Screening Program

- Colposcopy Information Sheet. Queensland Cervical Screening Program.
- Are Pap smears necessary after a hysterectomy?