

Promoting Cervical Screening Information for Health Professionals

Cervical Cancer

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1 Background Information

1.1 Incidence and Mortality of Cervical Cancer

Cervical cancer was the 11th most common form of cancer affecting in Queensland women during 2005 (QCR, 2008). In that year 175 Queensland women were diagnosed with cancer of the cervix and 42 women died as a result of this disease (AIHW, 2008). Cervical cancer is the number two cause of cancer death for Aboriginal and Torres Strait Islander women in Australia (Homewood et al., 2005).

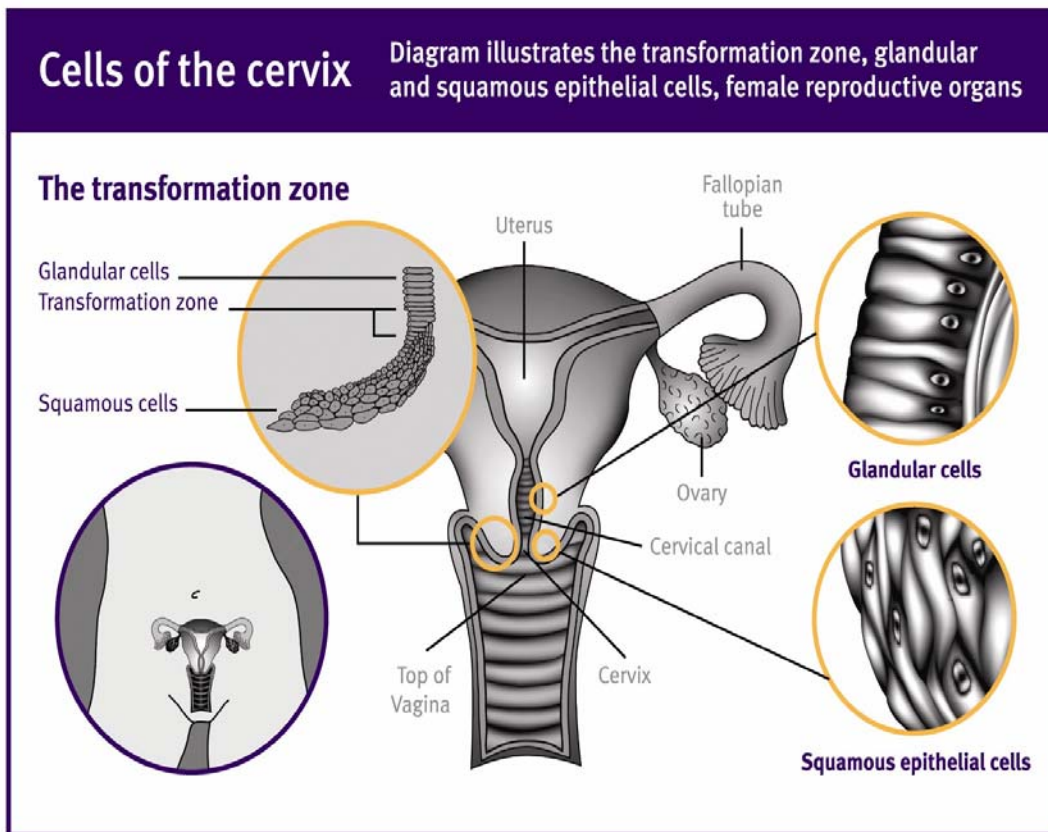
There has been a significant reduction in cervical cancer incidence and mortality in Queensland. Between 1999 and 2005, incidence has decreased from 10.6 to 8.7 (per 100,000 women) within Queensland. However the incidence of cervical cancer in Queensland is higher than all other Australian states and territories with the exception of the Northern Territory and Western Australia. Mortality due to cervical cancer has also fallen during this period from 2.5 to 2.0 (per 100,000 women) within Queensland (QCR, 2008). Queensland's mortality rate between 2002 and 2005 was consistent with the National average mortality rate over the same period - 2.0 per 100,000 women (AIHW, 2008).

Cervical cancer is widely recognised as one of the most preventable cancers. The most effective proven method of intervention to reduce the incidence rate and deaths from invasive cervical cancer is through regular screening of women at risk, using the Pap smear. Evidence shows the majority of women who develop cancer of the cervix have not had regular screening, or have never had a Pap smear (Victorian Cervical Cytology Registry, 2007). Regular participation in cervical screening is therefore key to the prevention of cervical cancer.

1.2 The Cervix

The cervix is the lower part of the uterus (womb), which protrudes into the vagina. The cervix is sometimes called the neck of the womb. The cervix is made up of two different types of cells. Squamous cells make up the epithelium that covers the outer part of the cervix (ectocervix) and glandular (columnar) or endocervical cells cover the inner part or the endocervix. The squamocolumnar junction is the junction between these two types of cells and where squamous metaplasia occurs. Squamous metaplasia is the process by which the glandular cells are replaced by squamous cells and the area where this occurs is referred to as the transformation zone (IARC, 2005).

Female Reproductive System



1.3 What is Cervical Cancer?

There are two main types of cervical cancer. These are squamous cell carcinoma and adenocarcinoma. The most common form of cervical cancer is squamous cell carcinoma which starts in the squamous cells of the cervix. Adenocarcinoma is much less common and occurs in the glandular cells. The Pap smear has led to a decrease in the number of women with squamous cell cervical cancer, but it is not designed to detect glandular changes so the rate of glandular or adenocarcinoma in Australia has not decreased since the introduction of an organised approach to cervical screening.

Squamous cell cervical cancers almost always arise in the transformation zone and it is therefore very important cells are taken from the transformation zone during a Pap smear, as this is the region most likely to undergo changes.

If cellular changes occur only in the outer layers of the cervix, or if the changes have not spread beyond the cervix the condition is easily treated. However, if the abnormal cells have spread outside and beyond the cervix, the chances of a cure and long term survival are progressively less and depend on how far the abnormal cells have advanced outside the cervix. It is extremely rare for a woman who has regular cervical screening to present with an abnormality this advanced.

1.4 Aetiology of Cervical Cancer

Recent advances in knowledge and understanding of human papillomavirus (HPV) and its role in cervical abnormalities and cervical cancer have led to a changed understanding of the cause of cervical cancer.

There is overwhelming evidence that infection with HPV is necessary though not sufficient, for the development of cancer of the cervix (Bosch et al., 2002). Recent data using sensitive laboratory techniques to detect HPV, has demonstrated that over 99.7% of cervical cancers test positive for HPV DNA (Walboomers et al., 1999). The National Institute of Health Consensus Conference on Cervical Cancer concluded “cervical cancer is unique in that it is the first solid tumour to be shown to be virally induced in essentially every case” (Braly, 1996).

Scientists have identified more than 100 types of HPV. These are referred to as genotypes and are classified by their DNA sequences, for example HPV10, HPV12, and so on. There are some HPV types (HPV6 and HPV11) which are responsible for genital warts, but are classified as low risk viruses, because they are almost never found in invasive anal or genital cancers. The high risk viruses (particularly HPV16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 68) on the other hand are found in varying proportions in invasive cancer and are responsible for invasive cervical cancers (Walboomers et al., 1999). Over 70% of cervical cancer has been attributed to HPV16 and HPV18.

A vaccine to prevent infection against HPV 16 and 18 enables primary prevention of cervical cancer. However, vaccination should not be seen as a replacement for regular Pap smears. The vaccine is most effective if given to girls before the start of sexual activity (before exposure to HPV). The vaccine does not protect against all oncogenic types of HPV. Pap smears remain an important part of the process to detect early changes to cervical cells.

An infection with high-risk genital HPV is almost always sexually transmitted (Castellsague et al., 2006). Four out of five women will have the virus at some time during their lives. HPV is common in early years of a women’s sexual activity, particularly in the first five years after she becomes sexually active. The incidence of HPV is highest among women in their twenties and declines rapidly with age.

Research shows there is more than a 50% chance of acquiring HPV after unprotected sexual intercourse. More than 95% of women who acquire a genital HPV infection clear the infection within 3 years and in most cases HPV infection clears in about 8 to 14 months without any treatment. Therefore, just because a woman has HPV, this does not necessarily mean she will get cervical cancer.

However HPV can cause cell changes to the cervix. These changes can occur when a woman first acquires HPV and these changes represent an acute infection with the virus. Changes can also occur when a woman has a persistent infection with HPV (most commonly over many years). The changes can vary from very mild (low grade) abnormalities to more serious (high grade) abnormalities and abnormalities can affect squamous cells, glandular cells or both. Changes to squamous cells are called squamous intraepithelial lesions (SIL). If left untreated, abnormal cells may return to normal (or regress), especially if they occurred due to an acute infection with HPV.

These changes may also persist and some will eventually progress into invasive squamous cell cancer (Munoz, 2000).

Several studies have shown that the majority of cases (98%) of low grade squamous intraepithelial lesions (LSIL) may spontaneously regress without treatment, which is why conservative management is recommended the first time a woman less than 30 years of age has a possible LSIL or LSIL Pap smear result. Even cases of high grade squamous intraepithelial lesions have been seen to regress spontaneously (NCSP, 2005). The progression time from a high grade abnormality to invasive cervical cancer can range from one to 30 years. On average, cervical cancer takes over a decade to develop (Munoz, 2000).

There is less known about the natural history of glandular abnormalities and for this reason, women with possible, low or high grade glandular abnormalities are referred for further investigations following an abnormal result.

Researchers are still investigating why some women with HPV go on to develop high grade cervical abnormalities. It is known that progression to a high grade lesion in young women (under 30) is uncommon and that there is a long time period involved (greater than 7 years on average).

While persistent infection of the cervix with a high-risk HPV type is necessary for the development of cervical cancer, it is not sufficient. Other factors have been found to be positively associated with a women's risk of persistent HPV infection and include smoking (amount, duration and age at which smoking commenced) and immunosuppression (eg having HIV/AIDS or taking certain medications).

Progression to cervical cancer has been positively associated with age at diagnosis (over 30 years of age) and the size and extent of the cervical lesion. Oral contraceptive use and parity (number of children the woman has had) have been shown to be associated with an increased risk of progression to cervical cancer in some studies.

For more detailed information relating to the virology of HPV please refer to, Chapters 3 & 4 of [Screening to Prevent Cervical Cancer: Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities](#)

1.5 Signs and Symptoms of Cervical Cancer

It is rare for women to have any signs or symptoms of cervical cancer early in the disease process, however when the disease is more advanced women can experience:

- Abnormal vaginal bleeding – bleeding between periods, following sexual intercourse (post-coital bleeding) or after menopause (postmenopausal bleeding)
- Unusual vaginal discharge – watery, pale, red or foul-smelling
- Pelvic pain – during sexual intercourse or at rest.

These signs or symptoms can occur for other reasons so should always be investigated.

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2.2 Additional Resources

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Early detection is the best protection. This is a brochure produced by the National Cervical Screening Program. It can be obtained free of charge by calling 13 15 56 (for the cost of the local call) or through the National website: www.cancerscreening.gov.au.