



### **Cervical Cancer and the Queensland Cervical Screening Program**

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and remote communities, programs and services to meet the needs of Indigenous women, and through general practice-based initiatives.

A number of success stories are evident from the data presented here for the 15 year period 1982 to 1996. Incidence and mortality rates from cancer of the cervix in Queensland continue to decrease, with the incidence rates for cervical cancer decreasing faster than those for any other cancer site. Age differentials remain however, with both incidence and mortality rates decreasing more slowly in women over 40 years of age.

Incidence and mortality rates in remote areas of Queensland remain higher than in urban and rural areas, most likely due to relatively large numbers of Indigenous women in these communities. Aboriginal and Torres Strait Islander women continue to suffer a disproportionate burden of illness and death from cancer of the cervix. In recognition of this, Queensland Health is in the final stages of developing a five-year strategic plan for cervical cancer prevention and control amongst Indigenous women.

In February 1999 Queensland Health established a Pap Smear Register, a central database of Pap smear and related histology results for Queensland women. Data from the Registry will be used over time to monitor participation in cervical screening, and will assist with identifying where further effort is required to recruit sub-groups of women to regular screening.

### **Organised screening with Pap smears**

The Pap smear test was first developed by George Papanicolaou and his colleagues in the 1940s [Papanicolaou & Traut, 1941]. Experts agree that population-based screening with this test is an effective way of reducing the incidence of and mortality from cervical cancer [Hakama, 1996]. It can detect early changes in the cells of the cervix before they have a chance to develop into cancer. Treatment of these precancerous lesions is simple and effective. Early diagnosis of cervical cancer is important because it improves the chances of survival. For women with localised disease, the five-year relative survival is 85%, whereas for distant disease (metastases) the five-year relative survival is only 7% [Supramaniam et al, 1999].

### **Summary**

Cervical cancer is one of the most preventable of all cancers. A reliable screening test exists (the Pap smear), and Australia has had the benefit of a national, coordinated cervical screening program for the last ten years. It is well recognised that with regular biennial screening, up to 90% of the most common form of cancer of the cervix can be prevented.

Queensland Health's Cervical Screening Program has been instrumental in enhancing women's access to screening services through a range initiatives in rural

A convincing body of non-experimental evidence points to the effectiveness of an organised screening program. Reductions in incidence and mortality are proportional to the intensity of screening efforts. For example, Scandinavian countries with high rates of screening, reported greater reductions in mortality than countries with lower rates of screening [Lara et al, 1987]. Further, mortality in the Canadian provinces was reduced most remarkably in British Columbia, which had screening rates that were twice those in the other provinces [Benedet et al, 1992]. Case-control studies have found that the risk of developing cervical cancer is 3-10 times greater in women who have not been screened [National Cancer Institute, 1999].

Queensland and Australia currently have annual incidence rates for cervical cancer of about 11 per 100,000 women. An incidence rate of 3 per 100,000 women is achievable if all women between the ages of 18 and 70 years had regular Pap smears [Bell and Ward, 1998].

### **The National Cervical Screening Program**

Australia adopted an organised, population-based screening program for cervical cancer in 1991 based on the recommendation of the AHMAC<sup>1</sup> report 'Options for Change' (AHMAC, 1991). A biennial screening policy was adopted, recommending that *'Routine screening with Pap smears should be carried out every two years for women who have no symptoms or history suggestive of cervical pathology. All women who have ever been sexually active should commence having Pap smears between the ages of 18 to 20 years, or one to two years after first sexual intercourse, whichever is later. Pap smears may cease at the age of 70 years for women who have had two normal Pap smears within the last five years. Women over 70 years who have never had a Pap smear, or who request a Pap smear, should be screened'* [Commonwealth Department of Health and Family Services, 1998].

The National Program is undertaking a substantial review of policy during 1999/2000, focusing on the appropriateness of the age range and screening interval [AIHW, 1999 in press]. Quality assurance standards endorsed by the National Association of Testing Authorities (NATA) have been introduced for pathology laboratories reporting cervical cytology as from July 1999, and significant activity is underway in the area of training and quality assurance for Pap smear providers.

### **Precursor lesions for cervical cancer**

Cervical cancer is an ideal disease for screening because while it is developing (a process that might take ten years or more) the cells usually show precancerous changes that can be detected by Pap smears. Further, these precancerous changes can be simply and effectively treated, thereby avoiding the development of cancer.

The most common type of precursor lesion is cervical intra-epithelial neoplasia (CIN). CIN is graded into three stages of severity, from CIN 1 (mild dysplasia), CIN 2 (moderate dysplasia) to CIN 3 (severe dysplasia or carcinoma-in-situ). It is not possible to predict which cases of CIN will progress to cancer and which will regress, although the more severe the abnormality the less likely it is to regress [Ostor, 1993]. Because of the usual timelag before the development of invasive cancer, regular two-yearly Pap smears give good protection and will detect nearly all cervical abnormalities before the onset of cancer [AHMAC, 1991].

### **Risk factors**

Human papilloma virus (HPV) has been shown to be present in nearly all cases of CIN and cervical cancer [Holly, 1996], and many epidemiologic studies have found that HPV is a strong risk factor for CIN and cervical cancer [Koutsky, 1997].

More than 100 types of HPV have been identified, but only about 20 of these infect the cervix, and only half of these are associated with cervical cancer or CIN. HPV types 6 and 11 tend to be associated with low grade CIN, which has a low risk of progression to cancer, whilst types 16 and 18, and several other less common strains, are associated with high grade CIN and cancer. Type 18 is especially found in adenocarcinoma of the cervix.

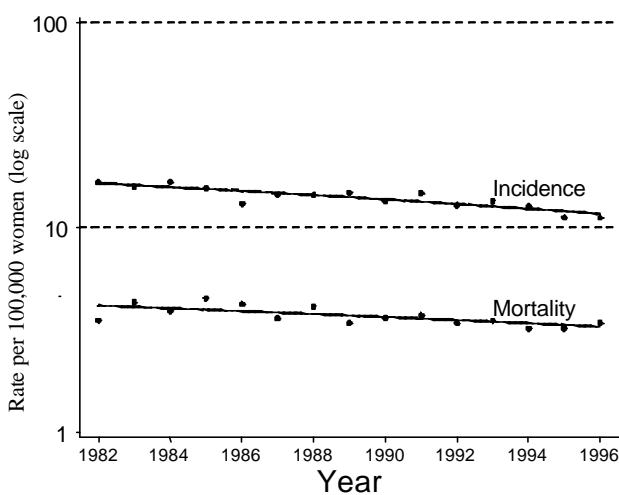
The vast majority of women with HPV do not develop cervical cancer or its precursor lesions. Epidemiological studies are now concentrating on cofactors such as smoking that need to be present in addition to HPV to cause cervical cancer [Commonwealth Department of Health and Family Services, 1998].

## Incidence and mortality trends in Queensland

In Queensland, the incidence rates for cervical cancer are decreasing faster than the rates for any other cancer site [Baade, 1999]. During the 15-year period, 1982 to 1996, the incidence rates decreased by 29% (Figure 1). There are currently about 185 new cases of cervical cancer diagnosed in Queensland each year, giving an annual rate of 11.0 new cases per 100,000 women. Data from the Queensland Centre for Gynaecological Cancer (QCGC), which treats about 90% of women diagnosed with cervical cancer in Queensland, suggest that the reduction in rates is continuing through 1997, 1998 and the first six months of 1999 (QCGC Database, 1999). If this present trend continues, the incidence rate will decrease to about 3.0 cases per 100,000 women by the year 2015.

For the 15-year period 1982 to 1996, mortality from cervical cancer also decreased by 29% (Figure 1). There are currently about 50 deaths from cervical cancer each year in Queensland giving an annual mortality rate of 3.0 per 100,000 women.

**Figure 1: Age-standardised incidence and mortality rates for cervical cancer, Queensland, 1982-1996**

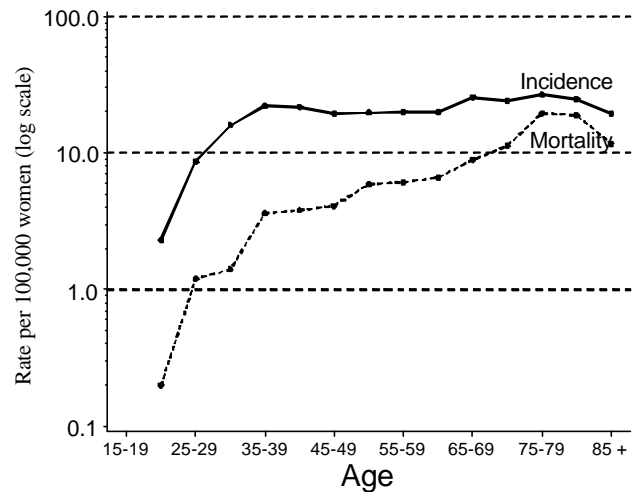


Source: Queensland Cancer Registry

## Age specific rates

Invasive cervical cancer is virtually unknown in women younger than 20 years and is very rare before the age of 25 years. Unlike most cancers (where the rates increase with increasing age) incidence rates for cervical cancer increase rapidly between the ages of 25 to 40 years and then remain relatively stable (Figure 2). Mortality rates show a more typical pattern with rates increasing more consistently with age.

**Figure 2: Age specific incidence and mortality rates for cervical cancer, Queensland, 1992-1996**

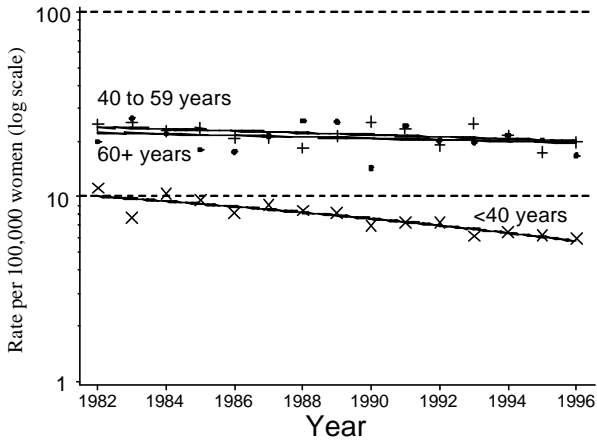


Source: Queensland Cancer Registry

## Age specific trends

In Queensland incidence rates for cervical cancer have decreased most rapidly in younger women. Specifically, for the period 1982 to 1996, the incidence rates decreased by 43% for women younger than 40 years, 16% for women 40 to 59 years and 12% for women 60 years or older (Figure 3). Screening participation data from Pap Smear Registers in other States and Territories may shed some light on this trend. Data indicates that participation in screening is highest amongst younger women [AIHW, 1998]. With increased participation in screening, it is expected that the incidence of cervical cancer would decrease as more abnormalities are detected early, at the precancerous stage.

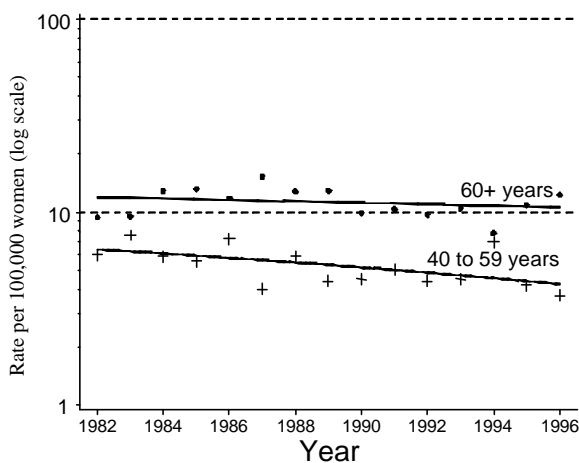
**Figure 3: Age-specific trends in incidence of cervical cancer, Queensland, 1982-1996**



Source: Queensland Cancer Registry

Mortality rates also decreased fastest in younger women. Over the 15 years 1982 to 1996, mortality rates decreased by 34% in women aged 40 to 59 years, compared with 11% for women aged 60 years or older (Figure 4). Trends in mortality could not be assessed for women younger than 40 years because death from cervical cancer is rare in this age group (about 6 deaths per year).

**Figure 4: Age-specific trends in mortality from cervical cancer, Queensland, 1982-1996**

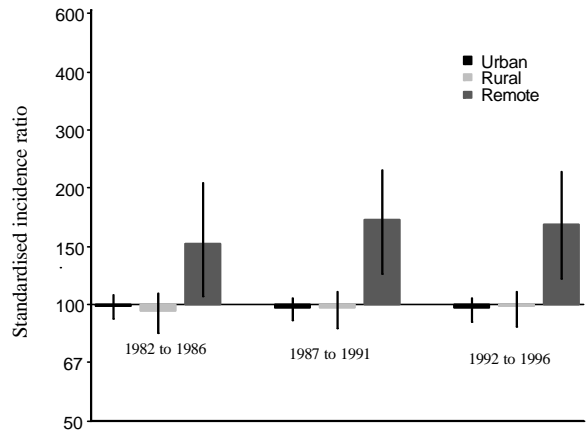


Source: Queensland Cancer Registry

**Urban, rural and remote differences in Queensland**

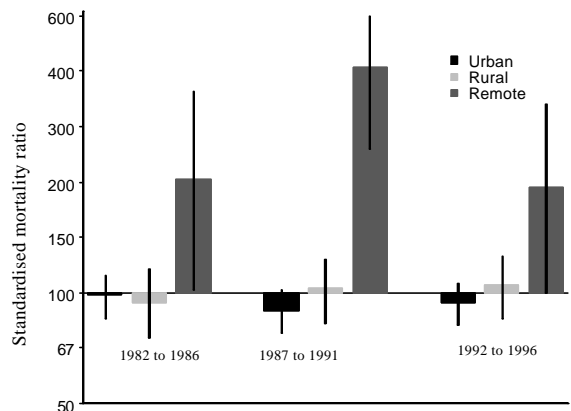
Incidence and mortality rates in urban and rural areas were similar to those for all of Queensland. In contrast the incidence and mortality rates in remote areas were 2 to 4 times higher than the state average (Figures 5 & 6). This pattern did not change significantly over the 15 years from 1982 to 1996. The higher rates in remote areas are very likely because a relatively large proportion of the women in remote areas are Indigenous (see next section).

**Figure 5: Standardised incidence ratios<sup>1</sup> for cervical cancer in urban, rural and remote areas in Queensland, 1982-1996**



Source: Queensland Cancer Registry

**Figure 6: Standardised mortality ratios<sup>1</sup> for cervical cancer in urban, rural and remote areas in Queensland, 1982-1996**



Source: Queensland Cancer Registry

1. The vertical bars represent 95% confidence intervals  
The Queensland average is 100

## Cervical cancer among Indigenous women in Queensland

Statewide incidence and mortality for cervical cancer are not available for Indigenous women. However, data from the discrete Aboriginal communities in rural and remote Queensland present an alarming picture. They show that, for the period 1982 to 1996, the incidence of cervical cancer was 4.7 times higher than that for the rest of Queensland (95% ci<sup>1</sup>: 3.2 to 6.6). The mortality rate was 13.3 times higher than the state average (95% ci: 7.8 to 21.4).

Data from the Torres Strait show that, for this same period, the incidence of cervical cancer was 5.3 times higher than the rest of Queensland (95% ci: 3.1 to 8.3). The mortality rate was 21.5 times higher than the state average (95% ci: 10.3 to 39.5).

This pattern of high incidence and even higher mortality supports the results of studies in other states/territories which found that a higher proportion of Indigenous women present with advanced cervical cancer and have a correspondingly poorer prognosis than would be expected in the general population. Although data concerning screening participation of Aboriginal and Torres Strait Islander women is generally not available, qualitative data from a recent research project in Queensland [Kirk et al, 1997] indicates that screening participation by Indigenous women is generally low, as is compliance with follow-up for cervical abnormalities. The reasons for this are complex, and will continue to be a major challenge for Queensland Health into the next millenium.

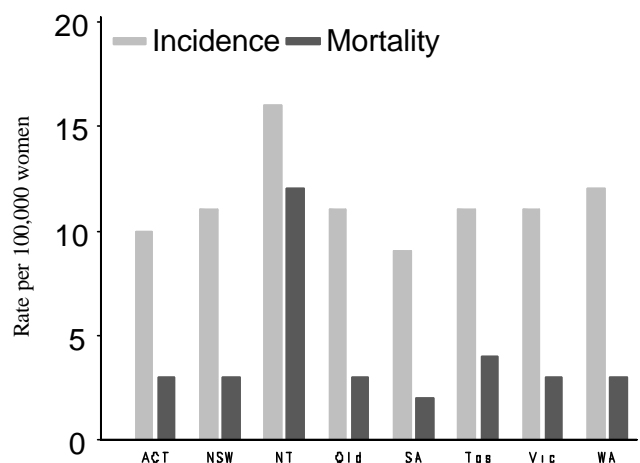
To date, significant progress has been made in establishing a cervical screening infrastructure for rural and remote Indigenous communities. This includes a dedicated mobile women's health nurse service, strengthening of primary health care and sexual health services, and facilitating access to visiting specialist services. Through a coordinated and integrated approach to service delivery, it is expected that significant health gains can be made in this area over the next 5-10 years.

1. ci denotes confidence interval

## Interstate comparisons

Incidence rates for cancer of the cervix among Australian states and territories are similar. The exception is the Northern Territory, which has much higher rates than the other jurisdictions (Figure 7). This is probably because a large proportion of the population of women in the Northern Territory are Indigenous. For mortality, the pattern was similar; high rates in the Northern Territory and lower rates in the other jurisdictions.

**Figure 7: Age standardised incidence and mortality rates for cervical cancer, States and Territories of Australia, 1991-1995**



Source: AIHW & AACR, 1998

## International comparisons

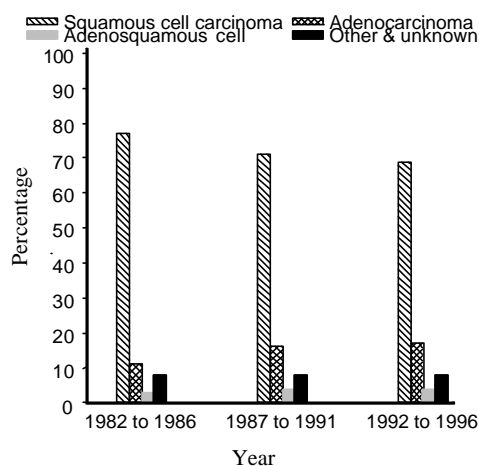
Worldwide, cervical cancer is second only to breast cancer as the most common malignancy in women. It is particularly common in developing countries where 80% of the world's cervical cancers occur. Among developed countries, Queensland (and the other states and territories of Australia except Northern Territory) have moderate rates; higher than those in Scandinavian countries, Japan and the United States (Caucasians only), but lower than those in Canada, Britain and New Zealand [IARC, 1999].

## Histology patterns

Cancer of the cervix has three major histological forms: squamous cell carcinoma, adenocarcinoma and adenosquamous cell carcinoma. In Queensland, the proportion of squamous cell carcinomas has decreased

from 77% in the period 1982-1986 to 69% in the period 1992-1996. There have been corresponding increases in the proportions of adenocarcinoma (11% to 17%) and adenosquamous carcinoma (3% to 5%). The proportion of cervical cancers with other or unknown histology has remained stable at 8%. The decrease in the proportion of squamous cell carcinomas was statistically significant (test for trend:  $\chi^2=14.1$ , degrees-of-freedom=1,  $p<0.01$ ). Similar trends have been observed in the other states [Jelfs, 1995].

**Figure 8: Histology type for cancer of the cervix, Queensland, 1982-1996**



### How can we strengthen our efforts to prevent cervical cancer?

Despite the recognised benefits of Pap smear screening and the existence of an organised screening program for over a decade, important subgroups of women remain un-screened, or under-screened. Australian studies have repeatedly found that low participation in screening is the main reason for women presenting with invasive cervical cancer [Mitchell & Giles, 1996; Wain et al, 1992].

Bell and Ward [1998] argue that to achieve higher population coverage and equity we need to implement effective recruitment strategies targeting older women, Indigenous women and women from non-English-speaking backgrounds.

Queensland Health, through the Queensland Cervical Screening Program has supported a range of initiatives

which focus on maximising women's participation in cervical screening. A network of thirteen specially trained Mobile Women's Health Nurses has been established across Queensland to provide preventive health services to Queensland women. These nurses work in partnership with the Royal Flying Doctor Service and the Commonwealth Department of Health and Aged Care to implement the Rural & Remote Women's Health Program whereby female general practitioners provide a visiting preventative health service for rural/remote women. Cervical screening is a significant component of these services.

The Queensland Cervical Screening Program is currently finalising a five year strategic plan for cervical cancer prevention and control amongst Indigenous women based on the outcomes of a research project undertaken in Queensland in 1997 [Kirk et al 1998]. This strategy incorporates a range of initiatives which aim to redress the high incidence and mortality rates from cancer of the cervix amongst Indigenous women. The strategy addresses areas including community education, clinical service provision, workforce development and training, cancer support services and monitoring and evaluation of efforts to enhance participation in screening. This document will guide not only Queensland Health, but a range of sectors and organisations involved in the provision of cervical cancer prevention and control services.

The recently established Queensland Health Pap Smear Register is an essential part of the cervical screening infrastructure in Queensland. The Register acts as a back-up reminder service for women overdue for their regular smear, and a safety net for those women who require follow-up for abnormal Pap smear results. These practical functions will benefit women greatly. Pap smear providers will also benefit from the Register, through the provision of screening histories to assist with clinical management decisions. Data from the Pap Smear Register will complement that currently available from the Queensland Cancer Register. In 2-3 years time, when data from a complete screening cycle is held on the Register, Queensland Health will be able to publish statistics relating to impact indicators such as participation in screening, and the detection of precancerous abnormalities.

### Notes on methods

- Directly age-standardised rates were calculated using the Australian 1991 Population Standard.
- Standardised incidence and mortality ratios were calculated using the age-specific rates for all of Queensland.
- Urban, rural and remote regions were assigned using the *Rural, Remote & Metropolitan Area Classification* [Dept of Primary Industries and Energy, Dept of Human Services and Health. Rural, Remote & Metropolitan Area Classification. AGPS, 1994].

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