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**Young Women's Cervical Screening:
A Literature Review**

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Overview

Cervical cancer is the ninth most prevalent cancer among Australian women, yet it is one of the few cancers that can be prevented (AIHW, 1999). Abnormal changes to cells of the cervix can be detected via regular Pap smears and easily treated through appropriate management before cancer develops. The National Health and Medical Research Council screening policy recommends routine screening (two yearly) for all women who have ever been sexually active commencing between the ages of 18 and 20 years, or one to two years after their first sexual experience, whichever is later. In order to achieve this recommendation it is important to inform women about the importance of regular Pap smears, so they can make an informed decision to participate in the cervical screening program.

Incidence and mortality

The effectiveness of cervical screening programs is demonstrated through a reduction in the incidence and mortality from cervical cancer. In Victoria, the incidence rate of invasive cervical cancer decreased by 28 per cent between 1982 and 1997. There was also a 47 per cent decrease in the death rate from cervical cancer between 1982 and 1997 (Thursfield, Whitfield & van Winckel, 1999). In 1982, there were 229 cases of invasive cervical cancer and 94 deaths in Victoria, compared with 180 cases and 68 deaths in 1997. Among women aged 20–39 years the incidence of invasive cervical cancer dropped from 53 in 1982 to 32 in 1997. In 1997 this accounted for 18% of women diagnosed with cervical cancer. In the older age groups, the incidence of cervical cancer was 83 for women aged 40–59 years and 65 for women aged over 60 years in 1997. Within the younger age group the average annual fall in incidence (over the 16 years) was 2.3%, which was a larger fall in incidence than in the 40–59 and 60+ age groups (0.9% and 1.6% respectively) (Thursfield, Whitfield & van Winckel, 1999). As the primary goal of cervical screening programs is to reduce the incidence and mortality of cervical cancer, these results would indicate that the program has been effective.

Human Papillomavirus (HPV)

At present more than 70 types of human papillomavirus (HPV) have been recognized, of which 35 are mucosal types (Meijer, Snijders & Brule, 2000). Mucosal HPV types can be classified as high-risk or oncogenic types and low-risk or non-oncogenic types (Meijer, Snijders & Brule, 2000). Infection with certain high-risk HPV types has been found in almost all patients with invasive cervical cancer (Bosch et al, 1995; Walboomers et al, 1999). However HPV is not a life-long infection. It has been found in a study of 608 women that by 12 months after the incident infection 70 percent of the women were no longer infected and by 24 months 91 percent were no longer infected (Ho et al, 1998). Similarly Elfgrén et al (2000) found the 5-year HPV clearance rate to be 92%. The median

duration of new HPV infections is about 8 months (Ho et al, 1998). Ho et al (1998) also found that a woman was more likely to lose an existing infection if it was newly acquired, and that the longer an infection persisted the more likely it was to continue.

Age and infection with high-risk types of HPV are risk factors for persistent infection (Nobbenhuis et al, 1999; Ho et al, 1998; Elfgrén et al, 2000). Development of cervical carcinoma and its precursor, cervical intraepithelial neoplasia (CIN), occurs primarily in women with persistent HPV infection. Nobbenhuis et al (1999) found that clinical progression of CIN lesions was not observed in the absence of high-risk human papillomavirus. Therefore persistent infection with high-risk human papillomavirus is required for development and maintenance of CIN 3. In the minority of women infected with high-risk HPV that does not spontaneously disappear, CIN can develop, but in the vast majority of these cases the virus clears eventually and the lesion subsequently disappears (Nobbenhuis et al, 1999; Ho et al, 1995). The natural history of HPV infection directly influences the prognosis of cervical dysplasia as measured by the persistence of the squamous intraepithelial lesion (Ho, et al, 1995).

On the other hand, in normal cytological smears HPV prevalence has been found to be age-dependent with the maximum prevalence between 20-24 years (Melkert et al, 1993) and 22-25 years (Ley et al, 1991), while younger and older women were less likely to be infected. Melkert et al (1993) found a statistically significant difference in HPV prevalence between young women aged 15-34 years and older women aged 35-55 years.

Screening rates

It was also found that over the past thirty years large increases in the number of women being screened have occurred. The participation rate for cervical screening in Australia for the period January 1997 to December 1998 was 63.9% for women aged 20-69 years. This was an increase of 1.5% across all age groups from 1996-1997 (62.4%). This resulted in 90,396 more women being screened in the more recent period (AIHW, 2000). There was an increase in screening rates from 1983 to 1992 from 210 smears per 1000 woman-years in 1983 to 303 smears per 1000 woman-years in 1992, which represents a 44% increase in the rate of cervical cancer screening (Straton, Holman & Edwards, 1993). There was also an increase in screening rates from 1971 (129 smears per 1000 women aged 20-69) to 1986 (181 smears per 1000 women) (Mitchell & Medley, 1987). The increase in participation rates in cervical screening until the early 1990s were due to the increase in opportunistic testing. Since then various programs and initiatives have become progressively more structured with recruitment programs to encourage high levels of participation by Australian women.

A number of studies in Australia looking at the distribution of people obtaining smears have shown that annual smear rates (calculated from the number of smear tests and an estimate of the female population) are highest among younger women. (Mitchell, Drake &

Medley, 1987; Armstrong, Rouse & Butler, 1986; Straton, Holman & Edwards, 1993). More recently however it has been found that participation rates (percentage of women screened in a 24-month period) are highest among women aged 50-54 years (72.5%) with participation rates for younger women ranging between 50.6% for women aged 20-24 years to 70.7% for women aged 35-39 years (AIHW, 2000). This information would suggest that initiatives to promote high participation among older women have been successful.

Among women aged 30-49 years, forty-six per cent of cervical cancer incidence and twenty-nine per cent of the deaths occur (AIHW, 1999). It is important therefore that young women continue their high levels of screening, as this will influence the incidence of and death from cervical cancer in women aged 30-49 years. Also precancerous cellular abnormalities precede invasive cancer of the cervix in nearly all cases so screening among younger women detects a high number of progressing lesions.

Of women who have never undergone a Pap smear test, a large proportion are under the age of 25. Studies have found that 34% (Dickson, Leeder & Sanson-Fisher, 1988) and 29% (Heywood et al, 1994) of women aged 18-24 had never had a Pap smear. While it has been suggested that women under the age of 25 may be potentially at high risk as many are sexually active (Dickson et al, 1988), invasive cancer is very rare before the age of 25. In most cases it takes more than a decade for low-grade cervical changes to progress to invasive cervical cancer and even when low-grade abnormalities are detected in young women, they are most often eradicated by the woman's immune system (Hassard et al, 2000). Thus, screening in women under the age of 25 may have limited value and could result in a substantial overtreatment of abnormalities that would spontaneously regress.

One major disadvantage of cervical cancer screening programs is the inevitable inclusion of nonprogressive cervical intraepithelial neoplasias in treatment groups. The biologic character of intraepithelial neoplasia is so uncertain that progressive neoplasias (leading to invasive tumors) cannot be distinguished from nonprogressive ones or regressive ones. This leads to a relative 'overdiagnosis', i.e. the inclusion of more intraepithelial neoplasias in treatment groups than is necessary on the basis of their behaviour. This leads to overtreatment (van der Graaf, Vooijs & Zeilhuis, 1990).

It has been found that there is a disparity between risk of cervical cancer and use of cervical cancer screening and colposcopy services. The mismatch is greatest for younger women. Although women younger than 35 have much lower rates of cervical cancer than women over 35, their patterns of colposcopy use are similar to those of women aged between 35 and 54, and higher than those of women over 55 (Kavanagh, Santow & Mitchell, 1996). Differences in colposcopy use by age may be explained by age specific differences in the rates of cytological abnormalities, differential rates of referral for colposcopy after Pap smear and higher frequency of Pap smear use in the younger age groups so that transient abnormalities are more likely to be detected (Kavanagh, Santow & Mitchell, 1996).

In young women the regression rate of early premalignant cervical neoplasia is high. Overdiagnosis and thus overtreatment, apart from being unnecessary and causing a certain morbidity, may be a threat to fertility when too large an area of endocervical mucosa is removed surgically (van der Graaf, Vooijs & Zeilhuis, 1990). The psychological sequelae of referral for colposcopy, with possible treatment, may be greater than the risk of serious disease developing from the abnormality that the smear identified (Shafi, 1994). Van der Graaf, Vooijs and Zeilhuis (1990) suggested that this could be a reason to abandon screening for young women because the positive effects (the detection of only a few women with invasive cancer) do not balance the large number of unnecessarily treated young women.

Early re-screening

Early re-screening occurs when a woman has a further Pap smear taken within a 24-month period, despite the result of the previous smear being negative (Commonwealth of Australia, 2000). Data has shown that 47% of women in Australia re-screen early (AIHW, 2000). High levels of early re-screening place a significant cost on all parties involved in screening. The women undergo an unnecessary and invasive medical procedure, and general practitioners have less time to spend on other patients or issues. The cost to the National Cervical Screening Program is potentially significant, especially where scarce funding may be better directed elsewhere, such as to women who are underscreened (Commonwealth of Australia, 2000).

Research has shown that significant predictors associated with women who overscreen are: residence in a capital city, young age and high socio-economic status (Mitchell, 2000). Among groups of women who rescreen within a two yearly period, many have no real understanding of what the test results reveal, the meaning of the results and / or the overall value of the Pap test as a screening device. Younger women particularly have little or no knowledge of the extent of the internal examination conducted, with many believing that a Pap smear will detect the presence of problems, such as STDs, thrush and/or chlamydia. Many also believe it provides an ideal opportunity of ensuring that their reproductive system is functioning correctly, and they are in good health (Blue Moon Research & Planning Pty Ltd, 1999).

Some women who re-screen early regard the two year interval as too long between tests and believe twelve months is the most appropriate, practical time frame for re-screening. These women consider longer intervals to be risky, irresponsible and / or impractical and less easy to remember (Blue Moon Research & Planning Pty Ltd, 1999). However when low-grade abnormalities are detected in young women, they are most often eradicated by the woman's immune system (Hassard et al, 2000). Also in most cases it takes at least 10 years for low-grade cervical changes to progress to invasive cervical cancer (Hassard et al, 2000; Meijer, Snijders & Brule, 2000). Therefore by following the recommended two yearly screening

rather than rescreening early a young woman is less likely to have an abnormality detected that would spontaneously regress, thus avoiding an unnecessary and invasive treatment.

In order to enhance women's compliance with the two yearly screening policy, various strategies have been suggested. One strategy is education for women to address relevant information on cervical cancer and the Pap smear in order to increase women's confidence to rescreen less frequently. Another is ongoing education for practitioners, with all practitioners being made aware of the policy and increasing their communication skills to make sure that woman understand about the Pap smear and the screening frequency required (Hassard et al, 2000; Muller, 2000). The overall percentage of women who re-screened early decreased by 1.4% between 1996-1997 (48.2%) and 1997-1998 (46.8%) (AIHW, 2000) suggesting that some progress has been made in this area.

Compliance with follow-up

One of the critical factors in decreasing the incidence and mortality of cervical cancer among screened women is ensuring compliance with follow-up. Compliance with periodic Pap smear screening, evaluation of abnormal Pap smears, and treatment of precursor lesions correlate with decreased incidence and mortality of cervical cancer (Pontén et al, 1995).

Strategies discovered in one study of younger women to increase compliance with Pap smear follow-up appointments and enhance appointment keeping among young women included education and the development of excellent communication and rapport with providers (Kahn et al, 1999). Many participants reported that developing a trusting and consistent relationship with a provider was essential to improve compliance. The issue of impulsiveness emerged in the context of asking participants why they would or would not keep a follow-up appointment. Several of the young women reported that they intended to keep their appointments but at the last minute made alternative plans (Kahn et al, 1999).

Cervical screening knowledge

Studies have found that younger women may be lacking knowledge about cervical cancer and screening. Studies have found young women have a poor knowledge of their screening status or they incorrectly reported the result of their Pap smear (Munk, et al, 1998; Kahn et al, 2000), what a Pap smear tests for (Hasenyager, 1999; Kahn et al, 1999), risk factors for cervical cancer (Hasenyger, 1999), and overall knowledge of cervical cancer (Bugu, 1998). Munk et al (1998) found in a study of women aged 20-29 years that 13% of women could not state correctly that they had been screened for cervical cancer. Also Kahn et al (2000) found that 14% of young women (mean age 18 years) incorrectly reported the results of their previous Pap smear. They found an association between subjects who did not report Pap results correctly and low knowledge of HPV, poor perceived communication with provider, and sexual risk behaviours. This suggests that these young women have an overall

poor knowledge of risk factors for cervical cancer or have a lack of perceived personal vulnerability.

Hasenyager (1999) found that although a significant proportion (90%) of respondents knew that the Pap smear screened for precancerous and cancerous lesions of the cervix, more than half the women (56%) believed they were being screened for other gynecologic conditions. This study also found that many participants lacked knowledge regarding risk factors for cervical disease.

In a qualitative study with 27 young women (mean age 18.7) all of whom had had a Pap smear, it was found that knowledge about Pap smears was poor with the majority of participants unable to distinguish between a pelvic examination and a Pap smear (Kahn et al, 1999). Participants could perceive benefits from getting Pap smears including prevention and early detection or diagnosis, and having peace of mind and several participants realised that it is possible to have an abnormality even if one is asymptomatic. These concepts should be emphasised in educating young women about normal and abnormal Pap smears. However there were also many perceived barriers to getting a Pap smear, namely pain and embarrassment, fear of finding a problem and fear of the unknown, denial, provider characteristics, and peers' advice (Kahn et al, 1999).

Another study found similar results about younger women's perceptions of benefits and barriers of getting a Pap smear. Burak and Meyer (1997) found that 93% (n=372) of participants aged 18 to 23 years responded that Pap tests and gynaecological screening were important to their health. Although there were some perceived barriers to getting a Pap smear including embarrassment (62%), cost (42%), and pain (36%), these did not stop the majority of participants from having a Pap smear as 82% reported having a Pap smear within the past year. While the majority of participants reported that Pap smears were important to their health, the majority (84%) did not think they were likely to get cervical cancer.

A study in South Africa among female university students found that both Pap smear testing rates and overall knowledge of cervical cancer was poor. Although respondents were able to identify the major risk factors from a given list, they lacked appreciation of personal risk of cervical cancer, and only 15% of respondents had had a Pap smear within the last 5 years. Of these people, a third did not go back for their results (Buga, 1998). However there was a high prevalence of the major risk factors for cervical cancer among the respondents, and these included initiation of coitus before 18 years (53.3%), multiple sexual partners (73.6%), male partner with other partners (37.7%), and previous history of sexually transmitted diseases (42.2%). These results suggest that this group of young women is at high risk of cervical cancer and attempts to increase the level of awareness and knowledge of cervical cancer, its prevention and the benefits of cervical screening programs need to be made (Buga, 1998).

Conclusion

These results suggest that the majority of younger adults have Pap smears, either through opportunistic testing or because they are aware that they should have them done, and a large proportion of women who are being screened fall in the younger age groups (18-39 years). However it seems that young women are not receiving sufficient information and are lacking knowledge about what they are being tested for, the risk factors for cervical cancer and information about what the results mean.

HPV infection and subsequent cervical abnormalities occur more frequently in younger women. However, HPV infection is mainly short-lived and the manifestation of HPV, particularly a low-grade squamous intraepithelial lesion, often undergoes spontaneous regression (Ho et al, 1998). It is therefore important that young women are aware of the risk factors and should follow the recommended screening and treatment guidelines. It is likely that by increasing young women's knowledge of cervical cancer, the Pap smear test, and the effectiveness of treatment, a reduction in anxiety will occur, resulting in improved adherence to Pap smear screening behaviour.

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