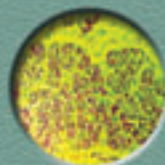
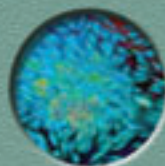


Western Australian Clinical Oncology Group

RECOMMENDATIONS
FOR SCREENING FOR
SPECIFIC CANCERS:
GUIDELINES FOR
GENERAL PRACTITIONERS



Second Edition
2005

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SCREENING FOR SPECIFIC
CANCERS: GUIDELINES FOR
GENERAL PRACTITIONERS

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2005



CORE FUNCTIONS OF THE WESTERN AUSTRALIAN CLINICAL ONCOLOGY GROUP

(Formed 1996)

Aims and objectives

- (i) To advise the Department of Health of Western Australia and The Cancer Council Western Australia on all aspects of cancer and in particular issues surrounding prevention, screening, diagnosis, treatment and professional education.
- (ii) Promotion of treatment guidelines.
- (iii) Increased involvement in clinical trials.
- (iv) To foster optimal cancer management in Western Australia through multidisciplinary clinical care.
- (v) Monitoring of and improvement in patient care (eg. patterns of care study, hospital based cancer registries).
- (vi) To act as a source of information and communication with national and international bodies.
- (vii) Improved access and information for regional and isolated communities.
- (xii) Medical education in cancer care, eg. seminar series, continuing medical education and the distribution of newsletters.

A document produced by the Western Australian Clinical Oncology Group

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The need for this information to be widely disseminated to the medical community of Western Australia was determined through the strategic planning process of the State Cancer Services Planning Committee in February 1997. It also is in line with one of WACOG's aims which is to foster a forum for discussion and dissemination of information on the aetiology, epidemiology and management of cancer. In 2003 it was decided that the evidence based screening literature and local incidence and mortality data be reviewed for the production of this second edition.

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May 2005

An electronic copy of this booklet is available at:
www.cancerwa.asn.au/gp/

Recommendations for screening for specific cancers:

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Foreword to Second Edition

Cancer and its treatment continue to be much feared in our community. In addition, knowledge about detection and management of cancer continues to evolve rapidly. For the population as a whole, cancer is common - up to a third of Australians develop an internal malignancy at some time in their lives, and perhaps twice this proportion have treatment for a skin cancer. Yet few doctors see and manage large numbers of cases of cancer, and this is particularly true in general practice. Brief but carefully-researched and authoritative reference materials are therefore invaluable in helping busy health professionals quickly get up to speed on the complex issues faced by patients with cancer, members of their families and the public at large.

The Western Australian Clinical Oncology Group is to be congratulated for undertaking revision of its *Recommendations for screening for specific cancers* as an important contribution to all Western Australians having easy access to the latest advice about early detection of cancer. It is also to be commended for being absolutely clear where expert opinion is unanimous, and where it remains divided. While we still await some important answers about whether screening for certain cancers does save lives, it is vital that proven strategies for early detection of common or treatable cancers are applied to every member of the relevant target group.

Konrad Jamrozik MBBS DPhil
Imperial College London
Professor of Primary Care Epidemiology

Introduction to second edition

In 1997 the Western Australian Clinical Oncology Group prepared a booklet to present current recommendations on screening for cancer. The aim was to produce a useful reference tool for general practitioners who are confronted with cancer screening issues in their day to day practice.

This booklet proved very popular among general practitioners and other health workers dealing with cancer screening issues. In 2003, the decision was made to update the booklet to include the very latest information available.

Eight common malignancies have been included in this review of screening recommendations: breast, cervical, colorectal, lung, melanoma, ovarian, prostate and testicular cancer.

This booklet is divided into two parts. Part 1 is concerned with definitions and distinctions between screening and *ad hoc* case-finding of malignant neoplasms. This section also presents internationally accepted criteria for the assessment of the evidence on benefits, risks and costs of cancer screening that were developed by the World Health Organisation. Further, the levels of scientific evidence that exist either to support or not support screening for a particular cancer are also presented. This information leans heavily upon the accepted protocol used by the *U.S. Preventive Services Task Force*. (1996).¹

Part 2 of the booklet deals with specific information regarding screening for each of the eight cancers. Firstly, summary information is presented under the following headings: recommendation for screening, methods of screening, frequency of screening, state of evidence, and special groups. More detailed information for each type of cancer follows the summary, expanding on each heading and including data on incidence and mortality for each cancer. Information presented in this booklet is complementary to that appearing in the Royal Australian College of General Practitioners publication titled: *Guidelines for Preventive Activities in General Practice*. (1996).² At the time of going to print these guidelines were being reviewed (<http://racgp.org.au>).

Part 3 of the booklet covers details regarding referrals to the Familial Cancer Program and Part 4 includes a list of useful local contacts.

References

1. *Guide to Clinical Preventive Services: Report of the U.S. Preventive Services Task Force*. 2nd ed. Baltimore: Williams and Wilkins, 1996.
2. *Guidelines for Preventive Activities in General Practice*. 4th Ed. Melbourne: Royal Australian College of General Practitioners, 1996.

PART I

Statistics

All incidence and mortality statistics presented in this booklet are published by the Western Australian Cancer Registry.¹

Up to date cancer incidence and mortality figures for Western Australia are available online at: www.health.wa.gov.au/wacr/.

Rates are calculated separately for males and females and are expressed as cases per 100 000 person-years.

Age-specific rates are based on five year age intervals and are calculated by dividing the numbers of cases by the population of the same sex and age group.

Age-standardised rates (ASR) are calculated by the direct method using the 'world' standard population as the external reference and represent a summation of weighted age-specific rates.

Lifetime risk is an estimate of the probability of being diagnosed as having cancer (incidence) or of dying of cancer (mortality) throughout life. These estimates derive from the cumulative incidence or cumulative mortality obtained by summing age-specific rates, and calculated for ages 0 to 74 years. In this document lifetime risk is expressed as a: '1 in n' chance of diagnosis or death due to a particular cancer.¹

Person-years of life lost is an estimate of the number of years of life lost due to specific causes of death, and is calculated only up to age 75 years, as an index of premature death.

Definitions of screening

Screening test

A screening test includes a questionnaire or interview, aspect of a physical examination, laboratory test or other investigation or procedure that is applied to an asymptomatic, apparently well individual in order to detect early evidence of abnormality such as a risk factor (eg increased blood pressure), premalignant changes (eg Pap smear) or early invasive malignancy (eg faecal occult blood testing).

Screening tests are not meant to be diagnostic. Rather, a positive finding will need to be confirmed by additional diagnostic procedures. Failure to follow up positive screening tests adequately has been the subject of medico-legal cases.

Application of a screening test does not necessarily equate with formal screening (see below).

Screening versus case-finding

A distinction between screening and case-finding is necessary. Screening refers to an attempt to apply a suitable screening test systematically to the whole of a defined target population. Case-finding occurs when the test is applied to members of the target population who come into contact with health services, either seeking the test or for some other, unrelated, reason. Thus 'screening', in this formal sense, is usually centrally organised and is certainly initiated by the health system at some level (as in mammographic screening). In case-finding, the patient initiates contact with the health system.

Few Australian general practices are able to conduct systematic screening because their record systems frequently do not allow them readily to identify all the individuals who form relevant target subsets of the population consulting the practice. For example, all women who have ever been sexually active and still have an intact uterus (the target population for Pap smears). Until almost all general practices do have such a capability, screening will have to be organised at higher levels in the health system, with all the attendant tensions related to follow-up, continuity of care, and so on.

The validity of screening tests

The reliability, sensitivity, specificity and the positive predictive value determine the validity and usefulness of a screening test².

Reliability - refers to the likelihood of the test producing the same (or very similar) result when repeated immediately on the same individual. A test with poor reliability will produce differing results on repetition. The coefficient of variation describes the range of variation when the test is quantifiable.

Sensitivity - refers to the proportion of individuals with the condition who test positive. For a screening test to be sensitive it must be able to detect the target condition in asymptomatic people. If the test has poor sensitivity, a large number of those with the condition will escape detection (false negatives), will be falsely reassured, and may subsequently delay presenting with symptoms when these do develop.

Specificity - refers to the proportion *without* the condition who test negative. The specificity of a test relates particularly to adverse effects. A highly specific test will test positive in very few of those who do not have the condition, that is, it will have a low proportion of false-positive results. Conversely, a test with poor specificity will misclassify and mislabel many healthy people as having the condition.

Positive predictive value (PPV) - refers to the proportion of patients who have a positive result on the screening test who are eventually found actually to have the disease. The PPV depends on both the specificity of the test and the frequency (prevalence) of the disease in the population undergoing screening. Where the prevalence is high, true positives will be relatively frequent, and the PPV will be high. Where the specificity of the test is high, false positives will be relatively rare and the PPV will be high.

Criteria for the assessment of the evidence on benefits, risks and costs of cancer screening

The following principles for identifying conditions that are suitable for mass population screening need to be considered (Wilson and Junger, 1968; adopted by the World Health Organisation):³

- The condition should be an important health problem
- There should be a recognisable latent or early symptomatic stage
- The natural history of the condition, including development from latent to declared disease, should be adequately understood
- There should be an accepted treatment for patients with recognised disease
- There should be a suitable test or examination
- The test should be acceptable to the population
- There should be an agreed policy on whom to treat as patients
- Facilities for diagnosis and treatment should be available
- The cost of screening (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole
- Screening should be a continuing process and not a 'once off' project.

Strength of recommendations

The US Preventive Services Task Force (USPSTF) grades its recommendations according to one of five classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms).⁴

- A - The USPSTF strongly recommends that clinicians routinely provide (the service) to eligible patients. The USPSTF found good evidence that (the service) improves important health outcomes and concludes that benefits substantially outweigh harms.
- B - The USPSTF recommends that clinicians routinely provide (this service) to eligible patients. The USPSTF found at least fair evidence that (the service) improves important health outcomes and concludes that benefits outweigh harms.
- C - The USPSTF makes no recommendation for or against routine provision of (the service). The USPSTF found at least fair evidence that (the service) can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.
- D - The USPSTF recommends against routinely providing (the service) to asymptomatic patients. The USPSTF found at least fair evidence that (the service) is ineffective or that harms outweigh benefits.
- I - The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing (the service). Evidence that (the service) is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

State of the evidence

Determination of the quality of evidence in the strength of recommendations is based on the systematic consideration of three criteria: the burden of suffering from the target condition, the characteristics of the intervention, and the effectiveness of the intervention as demonstrated in published clinical research.⁴

The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor):

- Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.
- Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalisability to routine practice, or indirect nature of the evidence on health outcomes.
- Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

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PART 2

BREAST CANCER - SUMMARY

Recommendation: Level A (Good Evidence)

In Australia, mammography is recommended every two years for average risk women between the ages of 50 and 69.

Mammographic screening is available to women aged 40-49 years who have decided that they wish to attend but the evidence is insufficient to actively recruit women in this age group for screening.

Method of screening

The screening test with the strongest level of evidence considered for the early detection of breast cancer is mammography.

Frequency of screening

Two yearly

State of evidence

Randomised controlled trials have demonstrated benefit of mammography for women at average risk age 50-69 years. Mammography for average risk women aged 40-49 years is still controversial.

Special groups

Women at moderately increased risk of breast cancer comprise 4 per cent of the population. They should attend for second yearly mammographic screening from the age of 50 years. Additional surveillance should be considered on an individual basis.

Women at potentially higher risk of breast cancer comprise a very small proportion of women (<1 per cent). The precise protocols for women at high risk remain controversial and they should be advised to attend a specialist cancer or genetic service for advice.

For more information

BreastScreen WA
9th Floor
Eastpoint Plaza
233 Adelaide Tce
Perth WA 6000
breastscreenwa@health.wa.gov.au
Information: (08) 9237 6900
or 1800 800 033 (toll-free for country callers)

BREAST CANCER

Statistics

During 2002, breast cancer was the most common registered internal malignancy in females in Western Australia. There were 1 130 new cases reported, at an age standardised rate of 86 cases per 100 000 women per year, accounting for 30 per cent of all registered cancers in females.¹ Breast cancer becomes more common with age, but the rate seems to be fairly constant after the age of 60 years at about 300/100 000 women. About 1 in 11 women could be expected to develop breast cancer before the age of 75 years. Three hundred and twenty four *in-situ* breast cancers were also reported in WA in the two years 1999 and 2000. The most common forms of breast cancer in 2000 were infiltrating ductal carcinoma (73 per cent), lobular carcinoma (10 per cent) and mixed ductal and lobular carcinoma (3.4 per cent).

There were 12 cases of breast cancer reported in WA men in 2002.

Breast cancer was responsible for 231 deaths in 2002 (15 per cent of all cancer deaths in females). The estimated lifetime risk of death due to breast cancer in women was 1 in 53. It accounted for an estimated 2 757 years of life lost in females (about 12 years per death).

Methods of screening

There are three screening tests considered for the early detection of breast cancer:

Clinical breast examination (CBE) is the clinical palpation of the breasts by a doctor to detect lumps. There is insufficient evidence that CBE improves survival of women by detecting breast cancer early.

Breast self examination (BSE) is when a woman observes and palpates her breasts herself to check for changes in normal texture and appearance. There is insufficient evidence to determine whether BSE is effective in detecting breast cancer early.

Mammography is the taking of x-ray images of the breast. The images are reviewed by radiologists for any abnormalities. There is evidence that mammography screening every 12-33 months significantly reduces mortality from breast cancer. Evidence is strongest for women aged 50-69. For women aged 40-49, the evidence that screening mammography reduces mortality is weaker and the absolute benefit of mammography is smaller than it is for older women.

In addition, thermography or thermal breast imaging has been suggested as a screening method but there is currently no scientific evidence to support the use of thermography and it is not recommended by either BreastScreen Australia or the Royal Australian and New Zealand College of Radiologists (see further references below).

Special groups

Women at moderately increased risk of breast cancer comprise 4 per cent of the population. This group includes women without the high risk features described below and with:

- One or two first-degree relatives diagnosed with breast cancer before the age of 50 or;
- Two first or second-degree relatives on the same side of the family, diagnosed with breast or ovarian cancer.

Women at potentially higher risk of breast cancer comprise a very small proportion of women (<1 per cent). The lifetime risk for breast cancer for a woman in this category may be as high as 80 per cent if she has inherited a high-risk mutation, or it may be as low as 9 per cent if she has not. This group includes women who have:

- Breast or ovarian cancer diagnosed in three or more first or second-degree relatives on the same side of the family; or
- Two or more first- or second-degree relatives on one side of the family diagnosed with breast or ovarian cancer, plus one or more of the following features (on the same side of the family):
 - bilaterality
 - onset of breast cancer before the age of 40
 - onset of ovarian cancer before the age of 50
 - breast and ovarian cancer in one individual
 - Jewish ancestry
 - breast cancer in a male relative.
- One first or second-degree relative diagnosed with breast cancer at age 45 years or younger, plus another first - or second-degree relative on the same side of the family with bone or soft tissue sarcoma at age 45 or younger.
- A germline mutation, demonstrated by genetic testing in a high-risk breast cancer-associated gene such as BRCA1, BRCA2, or Tp53.

Recommendations

In Australia, mammography is recommended every two years for average risk women between the ages of 50 and 69.²⁻⁶

BreastScreen Australia's policy on screening women aged 40-49 years is based on an National Health and Medical Research Council (NHMRC) review, which stated that mammographic screening should be available to women aged 40-49 years who have decided that they wish to attend. However, at this time it does not appear that the size of the benefit in terms of deaths prevented, balanced against the possible downsides for women, is sufficient to encourage women in this age group to have screening.

The Cancer Council recommends that all women aged 50 to 69 have a mammogram every two years through BreastScreen Australia. The Cancer Council also encourages women to be 'breast aware' by being familiar with the normal look and feel of their breasts and consult their doctor immediately if they notice any unusual changes.³

NHMRC guidelines state that women at moderately increased risk of cancer are advised to attend, at the very least, for second yearly mammographic screening from the age of 50 years. Additional surveillance such as mammograms from a younger age or more frequently should be considered on an individual basis. They may also be advised to attend annually for clinical breast examination.⁵

The precise protocols for women at high risk remain controversial and such individuals should be advised to attend a specialist cancer or genetic service for advice.⁷

Other organisations' recommendations for normal risk women

The US Preventive Services Task Force recommends screening mammography, with or without clinical breast examination every 1-2 years for women aged 40 and older. It found insufficient evidence to recommend for or against CBE or BSE alone.^{8,9}

The Australian Medical Association recommends screening mammography for women over 50 years of age and annual CBE.¹⁰

The National Breast Cancer Centre states that the evidence for the effectiveness of BSE is not sufficiently strong to justify continued campaigns to encourage its use. It considers that the potential for benefit from breast self-examination cannot be ruled out, but there is no adequate evidence that it results in the earlier detection of breast cancer. In contrast, randomised control trials of mammographic screening have demonstrated a clear mortality benefit for women aged 50 to 69.¹¹

The American Cancer Society recommends that women aged 40 and older should have a screening mammogram and CBE every year, and these women between the ages of 20 and 39 should have a CBE every 3 years. It also recommends that women over the age of 20 should perform BSE every month.¹²

The Canadian Task Force on the Periodic Health Examination recommends that there is good evidence for screening women aged 50-69 years annually by clinical examination and mammography.¹³

The recommendations of the Royal Australian College of General Practitioners are the same as those of the NHMRC and BreastScreen.⁶

Prevention

Although there have been many studies of risk factors for breast cancer, most of the factors that have emerged are beyond the control of the woman (eg family history, age at menarche) or unlikely to be modified (number of children, age at first pregnancy). Chemoprevention in high risk individuals using drugs such as tamoxifen is also being studied.

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National Advisory Committee to BreastScreen Australia. *Statement on use of thermography to detect breast cancer*. November 1999.

CERVICAL CANCER - SUMMARY

Recommendation for screening: Level A (Good Evidence)

Cancer of the cervix is one of the most preventable and curable of all cancers.

The current Australian recommendation is for all women who have been sexually active at any stage in their lives to have a Pap smear every two years until age 70 years.

Women should commence having Pap smears between the ages of 18-20 years or within two years after first sexual intercourse, whichever is later. In some cases it would be appropriate to start screening before 18 years of age.

Pap smears may cease at the age of 70 years for women who have had two normal 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.

Women who have had a hysterectomy for benign (non-cancer) reasons, and who have never had an abnormal smear, do not require further vaginal vault Pap smears. If, however, the hysterectomy was performed for a pre-cancerous CIN II/ III lesions, they will require annual vaginal vault smears for 5 years and then may revert to two-yearly vaginal vault smears for the rest of their life. Women who had a hysterectomy for a gynaecological cancer warrant vault smears at the discretion of their gynaecologist.

Method of screening

Pap smear

Frequency of screening

Every two years

State of evidence

Good evidence from multiple observational studies indicates that up to 90 per cent of the most common form of cervical cancer can be prevented by having regular two-yearly Pap smears.

Special groups

All women who have ever had sexual intercourse are at risk of cervical cancer. Women at increased risk include those with high-risk strains of genital Human Papilloma Virus (HPV), early age of first intercourse (<16 years), multiple partners or partners who have had multiple partners, and those who smoke, are taking the contraceptive pill, or have been exposed to Diethylstilbestrol (DES).

For further information

WA Cervical Cancer Prevention Program
Level 1, Eastpoint Plaza
233 Adelaide Terrace
PERTH WA 6000
Telephone: 13 15 16 (cost of a local call) or 1800 800 033
(toll free from the country)
Fax: (08) 9237 6991

CERVICAL CANCER

Statistics

In Western Australia in 2002 there were 78 cases of cervical cancer (ASR 6.4 per 100 000 women per year, or a lifetime risk of 1 in 161).¹ There were 29 deaths from cervical cancer in 2002. Nationally, there are still over 200 deaths a year from this cancer.

Squamous cell carcinomas of the cervix develop from pre-cancerous changes called Cervical Intraepithelial Neoplasias (CIN). In the vast majority of cases, if pre-cancerous lesions progress, they do so in an orderly fashion from less severe to more severe lesions. In WA, there were 1 003 *in-situ* cervical neoplasms during 2002.

Methods of screening

The principal screening test for cervical cancer is the Papanicolaou or Pap smear. Although the Pap smear can sometimes detect endometrial, vaginal and other cancers, its use as a screening test is intended for the early detection of cervical dysplasia and cancer. Cancer of the cervix is largely preventable through identification of precancerous lesions with regular Pap smears, followed by effective treatment.

There are a number of new technologies becoming available for cervical cancer screening that potentially improve sampling (eg Vedascope) and possibly increase representative cell yield. The latter include mono-layer cytology (eg ThinPrep), computerised re-screening and algorithm based screening. None of these techniques has been shown to be more effective than conventional Pap smears.

Organised screening programs overseas have demonstrated that regular screening with Pap smears can prevent about 90 per cent of squamous cervical carcinoma in women aged 35-70 years. Recent statistics indicate squamous cell carcinomas of the cervix accounted for roughly 70 per cent of all new cases of cervical cancer in women aged 20-69 years in Australia and adenocarcinomas 20 per cent (it should be noted adenocarcinoma of the cervix is not reliably detected by Pap smear), with the remaining tumours made up of a range of other histologies.²

As with all screening tests, a Pap smear is not appropriate as the only investigation in women with clinically suspicious symptoms or signs.

Screening has been available since the 1960s, but in 1995 a more structured program called the National Cervical Screening Program was developed. Cervical cytology registers now exist in all states and territories. These registries promote the regular participation of women and the follow-up of women with abnormal Pap smears, assist with the accurate reporting of Pap smears by pathology laboratories, and facilitate evaluation and monitoring of the program.

The Western Australian Cervical Cancer Prevention Program (WACCPP) coordinates recruitment programs to increase the proportion of women who regularly undergo cervical screening, in accordance with the National Policy for Screening for the Prevention of Cervical Cancer. The Program maintains the State Cervical Cytology Registry (CCR) database, contributes to policy development and coordinates education and training for health professionals across the screening pathway.

The WA CCR compiles and maintains a confidential database comprising the coded results of all Pap smears and cervical biopsies taken in Western Australia (unless the woman opts off), and has been fully operational since late 1994. The CCR acts as a 'safety net' for WA women, providing reminder letters to clinicians and women when Pap smears and other cervical follow-up are overdue. In addition, the CCR liaises closely with health care providers and laboratories, providing screening histories and assisting in the tracking of clients, to assist accurate and timely follow-up. The CCR also provides statistical and epidemiological data to key stakeholders, monitoring cervical screening participation rates and trends in abnormalities.

Special groups

Squamous cell carcinoma of the cervix and its precursors occur among women who are or have been sexually active. Risk factors relating to sexual behaviour associated with an increased risk of cervical cancer include early age of first intercourse and a greater number of lifetime sexual partners or partners who have had multiple partners. Although cervical cancer is associated with sexual activity, undue emphasis on sexually related risk factors can be counter-productive to women's participation in screening. Smoking and taking the contraceptive pill have been demonstrated to increase risk as well.

It should be noted that three out of every four women who develop cervical cancer have either never had a Pap smear or have not had one within the last five years.

Infection with high-risk strains of the HPV, spread through skin-to-skin contact, is the most important risk factor for cervical cancer. There are over 100 strains of HPV identified. However, only a handful have oncogenic capabilities. These strains are considered 'high-risk' and include numbers 16, 18, 31, 33 and 35. At least 95 per cent of squamous cell cervical cancers have detectable oncogenic HPV DNA. HPV is often asymptomatic and may be dormant and subclinical. High-risk HPV can be detected using a variety of diagnostic molecular biology tests. However, these are usually only offered to women who have detectable HPV-related changes present in Pap smears and are not a screening tool for the infection. At the present time, there is no screening test available for HPV.

Recommendations

The current Australian recommendation is for all women who have been sexually active at any stage in their lives to have a Pap smear every 2 years until age 70 years.^{3,4}

The Cancer Council recommends that all women aged 18 to 70 who have ever been sexually active have a Pap test every two years as part of the National Cervical Screening Program.⁵

All women who have ever been sexually active should commence having Pap smears between the ages of 18-20 years or within two years after first sexual intercourse, whichever is the later. In some cases it would be appropriate to start screening before 18 years of age.

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.

There is no evidence to suggest that high-risk groups should be screened more often, with the exception of recent diagnosis and treatment of CIN and/or HPV.

Women who have had a hysterectomy for benign (non-cancer) reasons, and who have never had an abnormal smear, do not require further Pap smears. If, however, the hysterectomy was performed for a pre-cancerous CIN II/III lesions, the woman is considered to be at higher-risk of developing an occult lesion in the vagina and will require annual screening for 5 years and then may revert to two-yearly vaginal vault smears for the rest of their life. Women who have had a hysterectomy following a gynaecological cancer will warrant vault smears at the discretion of their gynaecologist. Vaginal vault smears should be taken from the hysterectomy suture line.

Other organisations' recommendations for normal risk women

Most other countries with organised screening programs have standardised recommendations regarding Pap smear screening intervals. In the US, the screening interval is 'at least every three years'.⁶

The US Preventive Services Task Force concluded that there was no evidence available to judge whether new technologies are more effective than conventional Pap smears. It also found that the evidence was insufficient to recommend for or against the routine use of HPV testing as a primary screening test for cervical cancer.^{7,8}

The Canadian Task Force on the Periodic Health Examination recommends annual screening following initiation of sexual activity or age 18; after 2 normal smears, screen every 3 years to age 69.⁹

Prevention

In women who have ever been sexually active, having a regular two-yearly Pap smear is the best defence against the development of cancer of the cervix.

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COLORECTAL CANCER - SUMMARY

Recommendation for screening: Level A (Good Evidence)

The recommendations for screening for colorectal cancer vary according to the patient's personal and family history (see categories and special groups sections below).

Category 1 - *Asymptomatic individuals with no family history*

The recommendation is that FOBT be performed from the age of 50. The minimum effective program is the performance of FOBT on three serial stools at least every second year, but preferably annually. In addition, it is acceptable to offer screening flexible sigmoidoscopy on a five-yearly basis.

Methods of screening

- Faecal Occult Blood Screening (FOBT) yearly or two-yearly
- Flexible sigmoidoscopy every 5 years
- Colonoscopy every 10 years
- Double contrast barium enema every 5 years

Frequency of screening

As stated above

State of evidence

There is good evidence that periodic FOBT reduces mortality from colorectal cancer and fair evidence that sigmoidoscopy alone or in combination with FOBT reduces mortality. Efficacy of colonoscopy is supported by indirect evidence. There is no direct evidence as yet that screening colonoscopy, double contrast barium enema or the newer technologies (such as virtual colonoscopy) are effective in improving health outcomes.

Special groups

Category 2 - *Asymptomatic individuals at moderate risk*

People *without* the *high-risk* features described below and with either:

- One first-degree relative with colorectal cancer diagnosed before the age of 55 years or
- Two first or second-degree relatives on the same side of the family with colorectal cancer diagnosed at any age.

It is recommended that these individuals be referred for colonoscopy at five-yearly intervals from age 50, or 10 years younger than the age of the earliest diagnosis of colorectal cancer in the family, whichever comes first. If colonoscopy is unavailable, then it is appropriate to offer flexible sigmoidoscopy or double contrast barium enema. It is worth considering annual FOBT in the intervening years.

Category 3 - *Asymptomatic high risk individuals*

High risk features are:

- Three or more first or second degree relatives on the same side of the family diagnosed with colorectal cancer
- Two or more first-degree or second degree relatives on the same side of the family diagnosed with colorectal cancer, including any of the following high risk features:
 - Multiple colorectal cancers in one person
 - Colorectal cancer before the age of 50 years
 - At least one relative with endometrial or ovarian cancer.
- At least one first-degree or second-degree relative with colorectal cancer, with a large number of adenomas throughout the large bowel
- Someone in the family with a high-risk gene mutation in the adenomatous polyposis coli or one of the mismatch repair genes.

Asymptomatic high risk individuals should be managed with the support of clinical genetics and cancer genetic services underpinned by family registries. Referral to these services should be early (age 10-25 years).

For further information

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Familial Cancer Program
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Fax: (08) 9340 1678

COLORECTAL CANCER

Statistics

During 2002, colorectal cancer was the third most common registered cancer in males and females in Western Australia.¹ There were 560 new cases reported for males, at an age standardised rate of 41.2 cases per 100 000 men per year, accounting for 12 per cent of all cancers in males. In females, there were 445 cases, corresponding to an age standardised rate of 28 per 100 000 representing 12 per cent of all cancers in females.

Colorectal cancer becomes more common with age, and peaked in the over 85 year age group at 522 per 100 000 in females and 324 per 100 000 in males. Colorectal cancer affects older age groups more than does breast cancer or melanoma; the median age at diagnosis was 69 years in males and females but 25 per cent of all cases were diagnosed before the age of 60 years in both sexes.

Colorectal cancer was responsible for 408 deaths in WA in 2002 (13 per cent of all cancer deaths in males females). Death due to colorectal cancer was rare before the age of 45 years, but rose with increasing age thereafter. The estimated lifetime risk of death due to colorectal cancer was 1 in 58 for men and 1 in 83 for women. It accounted for an estimated 1 523 years of life lost in males and 1 046 years of life lost in females (about 6.8 years per death).

Methods of screening

Faecal Occult Blood Screening (FOBT): A small amount of faeces is placed on a slide impregnated with a chemical that is capable of detecting the presence of microscopic amounts of blood. Alternatives are to test one sample only or to test samples on 3 consecutive days.

Flexible sigmoidoscopy: Uses a flexible tube with a miniature video camera at the tip to see the rectum and sigmoid colon. Biopsies of abnormal tissues can also be taken and polyps can be removed.

Colonoscopy: Uses a longer flexible tube with miniature video camera to examine the entire large intestine. Biopsies or polypectomies can also be performed.

Double contrast barium enema: A contrast material (barium sulphate) is inserted into the rectum by catheter. Air is then added and a series of x-ray films taken.

Special groups

Category 1 (about 98 per cent of the population). This risk group comprises asymptomatic individuals who do not have a positive family history.

Category 2 (about 1-2 per cent of the population). This risk group comprises asymptomatic people without the potentially high-risk features relevant in *Category 3* and with either:

- One first-degree relative with colorectal cancer diagnosed before the age of 55 years or
- Two first or second-degree relatives on the same side of the family with colorectal cancer diagnosed at any age.

Category 3 (less than 1 per cent of the population), comprises asymptomatic people with:

- Three or more first or second degree relatives on the same side of the family diagnosed with colorectal cancer
- Two or more first-degree or second degree relatives on the same side of the family diagnosed with colorectal cancer, including any of the following high risk features:
 - Multiple colorectal cancers in one person
 - Colorectal cancer before the age of 50 years
 - At least one relative with endometrial or ovarian cancer.
- At least one first-degree or second-degree relative with colorectal cancer, with a large number of adenomas throughout the large bowel
- Someone in the family with a high-risk mutation in the adenomatous polyposis coli or one of the mismatch repair genes.

Recommendations

Currently, the NHMRC states that, provided there has been a full discussion of the risks involved, it is recommended that FOBT be performed from the age of 50 in asymptomatic individuals who do not have a positive family history (*Category 1* of the risk categories).² The minimum effective program is the performance of FOBT on three serial stools at least every second year, but preferably annually. Evidence from controlled trials suggests this approach will lead to a reduction in mortality of about 40 per cent in participants. The process would be expected to detect 40-80 per cent of cancers, depending on the actual FOBT used and the frequency of use.

In addition, it is acceptable to offer screening flexible sigmoidoscopy on a five-yearly basis. FOBT and sigmoidoscopy are complementary in that FOBT has the potential to detect lesions proximal to the reach of the sigmoidoscope.

It is recommended that people in *Category 2* be referred for colonoscopy at five-yearly intervals from age 50, or 10 years younger than the age of the earliest diagnosis of colorectal cancer in the family, whichever comes first. If colonoscopy is unavailable, then it is appropriate to offer flexible sigmoidoscopy or double contrast barium enema. It is worth considering annual FOBT in the intervening years.²

People in *Category 3* should be managed with the support of clinical genetics and cancer genetic services underpinned by family registries. Referral to these services should be early (age 10-25 years).³

Other organisations' recommendations for normal risk subjects

The Royal Australian College of General Practitioners recommends 2-yearly FOBT for all adults over 50 years and that five-yearly sigmoidoscopy should also be considered.⁴

The US Preventive Services Task Force recommends that clinicians screen men and women 50 years of age or older for colorectal cancer.⁵⁻⁷ They found that there is good evidence that periodic FOBT reduces mortality from colorectal cancer and fair evidence that sigmoidoscopy alone or in combination with FOBT reduces mortality. The efficacy of colonoscopy is supported by indirect evidence. There is no direct evidence as yet that screening colonoscopy, double contrast barium enema or the newer technologies (such as virtual colonoscopy) are effective in improving health outcomes. In conclusion, the Task Force states that there are insufficient data to determine which strategy or test is best in terms of the balance of benefits and potential harms or cost-effectiveness.

The American Cancer Society recommends that, beginning at age 50, both men and women should follow one of the five options below:

- FOBT every year
- Flexible sigmoidoscopy every 5 years
- FOBT every year plus flexible sigmoidoscopy every 5 years
- Double-contrast barium enema every 5 years
- Colonoscopy every 10 years.⁸

The Canadian Task Force on the Periodic Health Examination recommends that screening for colorectal cancer be offered to adults aged 50-74 years using FOBT and repeated every 2 years.⁹

Prevention

Many of the general recommendations in relation to diet and lifestyle designed to avoid or at least reduce the incidence of major diseases are also relevant to colorectal cancer. The most important recommendations from the perspective of colorectal cancer are:

- Eat a well-balanced and varied diet
- Avoid excess calories by selecting away from high fat, high sugar foods
- Consume poorly soluble cereal fibres
- Ensure adequate dietary calcium
- Participate regularly in physical activity
- Restrict alcohol intake.

Agents such as selenium supplements, aspirin, non-steroidal anti-inflammatory drugs and selective cox-2 inhibitors may be important in the prevention of colorectal cancer but are not recommended until further research is conducted.

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LUNG CANCER - SUMMARY

Recommendation: Level I (Insufficient Evidence)

No organisations currently recommend screening for lung cancer.

Methods of screening

Chest x-ray; sputum cytology; spiral CT scanning.

Frequency of screening

Unknown

State of evidence

Randomised controlled trials have not demonstrated a reduction in lung cancer mortality resulting from screening with chest x-ray, spiral CT scanning or sputum cytology.

Special groups

Heavy smokers and people with heavy asbestos exposure.

LUNG CANCER

Statistics

During 2002, lung cancer was the fourth most common registered cancer in both males and females in Western Australia.¹ There were 806 new cases reported (513 males and 293 females), at an age standardised rate of 38 cases per 100 000 men per year and 19 cases per 100 000 women per year. Lung cancer becomes more common with age and is not common before the age of 50. About 1 in 21 men and 1 in 41 women could be expected to develop lung cancer before the age of 75 years.

Lung cancer was responsible for 686 deaths in 2002 making it the most common cause of cancer death in both males and females. 24 per cent of male cancer deaths and 17 per cent of female cancer deaths were due to lung cancer. The estimated lifetime risk of death due to lung cancer in was 1 in 25 for men and 1 in 64 for women. It accounted for an estimated 2 218 years of life lost (about 6 years per death).

Methods of screening

Chest x-ray - several studies have examined screening by chest x-ray every 4 months, annually or three yearly. None of them has yet shown a mortality benefit for screening.²

Sputum cytology has also not been shown to be effective even when used as an adjunct to annual chest x-ray.

Spiral computed tomography (also known as helical CT scanning) has recently been suggested as a more sensitive screening test for lung cancer with a lower dose of radiation. It is currently the subject of a number of large trials.

Special groups

Heavy smokers are at much higher risk of lung cancer than non-smokers. Occupational exposure to various carcinogens is also a risk factor, and in Western Australia, working or living near asbestos mines and factories is a significant cause. General air pollution, including passive smoking, may also be responsible for a small number of lung cancers.

Recommendations

The Australian Cancer Network and the NHMRC recently released draft guidelines for the management of lung cancer.³ These state that no forms of population screening for lung cancer, including regular chest radiography, with or without sputum cytology, even in high-risk groups, are recommended. In addition, in view of the limited information available on outcome, helical CT scanning for lung cancer is not recommended except in the context of a well-designed clinical trial. The NHMRC recommends against screening asymptomatic people for lung cancer.⁴

No other organisations currently recommend routine screening for lung cancer of either the general population or smokers. The National Cancer Institute (US) considers that there is evidence against screening based on two important harms which may result from screening with chest x-ray: false positive tests can lead to invasive procedures; and over-diagnosis of non-malignant tumours is likely to occur.²

The US Preventive Services Task Force concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for lung cancer with either CT scanning, chest x-ray, sputum cytology or a combination of these tests.⁵ The Canadian Task Force on the Periodic Health Examination states that there still is fair evidence to recommend against screening asymptomatic people for lung cancer using chest radiographic examination.⁶

Prevention

All patients should be asked if they smoke and should be counselled against use of tobacco.

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Recommendations for screening for specific cancers:

MELANOMA - SUMMARY

Recommendation: Level I (Insufficient Evidence)

In Australia, mass screening the general asymptomatic population for melanoma is not recommended.

Most organisations recommend annual screening for those at high risk, including the NHMRC.

Methods of screening

The two screening tests considered for the early detection of melanoma are physical examination of the skin by a general practitioner or specialist, and self-examination.

Frequency of screening

Unknown

State of evidence

The evidence is insufficient to recommend for or against routine screening for skin cancer using a total-body skin examination.

Special groups

People at moderately increased risk of melanoma are those with: fair skin; tendency to burn in sunlight; freckling; atypical moles; more than 50 moles on the body; family history of melanoma; past history of melanoma or non-melanoma skin cancer.

People at potentially high risk of melanoma comprise those with familial syndromes such as dysplastic naevus syndrome.

Prevention

Reduction of individual sun exposure is recommended as a preventive strategy for melanoma.

For more information

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MELANOMA

Statistics

During 2002, melanoma was the second most common registered cancer in males and the third most common registered cancer in females in Western Australia.¹ There were 1 045 new cases reported, at an age standardised rate of 33 cases per 100 000 women per year, and 49 cases per 100 000 men per year. It accounted for 13 per cent of all cancers in males and 13 per cent in females. About 1 in 19 men and 1 in 29 women will develop melanoma during their lifetime. Melanoma, more than most other cancers, affects people of an extremely wide range of ages with 50 per cent of cases occurring before the age of 55 years.

As a cause of death, melanoma is not among the ten leading cancers for either males or females. Melanoma was responsible for 82 deaths in 2002. It accounted for an estimated 942 years of life lost in Western Australia (about 11 years per death).

Non-melanoma skin cancer

The most common types of primary non-melanoma skin cancers are squamous cell carcinoma (SCC) and basal cell carcinoma (BCC). Because these are commonly treated by methods that do not permit definite diagnosis, collection of statistics would be incomplete and unreliable in many areas, and very few cancer registries throughout the world report on these two types of cancer. Statistics on the incidence of non-melanoma skin cancer (NMSC) in Western Australia include only the other forms of NMSC such as sweat gland carcinomas and Merkel cell carcinomas. However, Western Australia Cancer Registry mortality statistics do include deaths due to SCC and BCC as these data are thought to be complete. As these forms of skin cancer are very common but not often fatal, and their relation to sun exposure is well-established, they may be thought by some, to be of less clinical interest than other forms of cancer.

Methods of screening

The two screening tests considered for the early detection of melanoma are physical examination of the skin by a general practitioner or specialist, and self-examination.

Detection of melanoma requires examination of the whole skin, which is time-consuming and potentially embarrassing. The sensitivity and specificity of total-body skin examination by a dermatologist are reported to be high (94 per cent and 98 per cent, respectively). Screening performed by non-specialists is reported to miss slightly more cases, but result in many more false positives. There are no data on accuracy of self-examination.

Special groups

People at potentially high risk of melanoma are those with one or more of the following characteristics:

- Multiple cases of melanoma on the same side of the family
- Early age of onset of melanoma in the family
- Multiple primary melanomas in the same individual
- The presence of multiple atypical naevi, often distributed over both sun-exposed and non-exposed skin surfaces. These naevi may be distinguished by the presence of unevenness of pigmentation, red-brown colour, indistinct irregular margins, asymmetry, and size often greater than 5 mm in diameter. When there are large numbers of these atypical naevi the term 'dysplastic naevus syndrome' is sometimes applied. Only about one third of Australian hereditary melanoma families display this skin phenotype.

People at potentially high risk of melanoma comprise a very small proportion of the population (<1 per cent). These people should be educated about sun protection and examination, should have three-monthly self-examination and examination by a family member, and should have six-monthly or annual dermatological examination including adequate examination of the scalp. Techniques such as skin-surface microscopy, full-skin photography and excision biopsy of suspicious skin lesions may be appropriate.

Recommendations

In Australia, mass screening for melanoma of the general asymptomatic population is not recommended. The Cancer Council states that there is no reliable scientific evidence that population screening for melanoma can reduce mortality from this disease - this is a research priority.²

NHMRC recommends annual screening for those at high risk.^{3,4} People at very high risk of melanoma (as stated above) should be advised of the specific changes which suggest melanoma, encouraged to perform self examination, and offered a surveillance program.⁵

Other organisations' recommendations for those at average risk

The Royal Australian College of General Practitioners recommends screening only in high risk individuals who have multiple banal or dysplastic naevi and a history of melanoma and/or dysplastic naevi in first degree relatives. In these people, full-body screening by medical practitioners should occur at least annually and patients should be encouraged to perform self-examination.⁶

The US Preventive Services Task Force concluded that the evidence is insufficient to recommend for or against routine screening for skin cancer using a total-body skin examination.⁷

The Canadian Task Force on the Periodic Health Examination also does not consider there is adequate evidence to recommend either for or against examination by self or by medical practitioner.⁸

Self-screening is advocated by the American Cancer Society,⁹ the National Cancer Institute (US)¹⁰ and the American Academy of Dermatology.¹¹ The American Cancer Society also recommends regular screening by a health professional.

Prevention

Reduction of individual sun exposure is recommended as a preventive strategy for melanoma. No population-based studies show unambiguously a reduction in the overall incidence rate of melanoma due to primary prevention but the epidemiological evidence of the influence of sun exposure on the rate of cancer strongly suggests that this would be an effective preventive measure.

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OVARIAN CANCER - SUMMARY

Recommendation: Level I (Insufficient Evidence)

Routine screening of asymptomatic women for ovarian cancer is not recommended by any official body.

Methods of screening

There are several methods of screening, but none of them are very accurate in asymptomatic women. They include: pelvic examination; Pap smear; transabdominal and transvaginal ultrasound; and the serum tumour marker CA-125. In addition, multimodality screening using both ultrasound and CA-125 is currently being trialled.

Frequency of screening

Unknown

State of evidence

Insufficient to recommend screening.

Special groups

Groups at high risk of ovarian cancer include women with a strong family history of breast and/or ovarian cancer (two or more first-degree relatives and/or a relative with cancer before menopause) or colon cancer (at least three affected family members in at least two successive generations, with one case below age 50 years).

For more information

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OVARIAN CANCER

Statistics

During 2002, ovarian cancer was the eighth most common registered cancer in females in Western Australia.¹ There were 112 new cases reported, at an age standardised rate of 8 cases per 100 000 women per year. About 1 in 95 women could be expected to develop ovarian cancer before the age of 75 years.

Ovarian cancer was responsible for 72 deaths in 2002. The estimated lifetime risk of death due to ovarian cancer in women was 1 in 182.

Methods of screening

Pelvic examination has been suggested as a screening test but is not regarded as a useful means of detecting early cases in asymptomatic women.

The *Pap smear* is also insufficiently sensitive to ovarian cancer.

Ultrasound imaging can be used to detect ovarian cancers. Transabdominal and transvaginal ultrasound have both been investigated as screening methods. A serious potential harm from these methods is the number of false-positives, which may lead to anxiety and invasive diagnostic procedures. There is evidence that screening for ovarian cancer with ultrasound would result in more diagnostic laparoscopies and laparotomies than new ovarian cancers found. Unnecessary oophorectomies may also result.

The serum tumour marker *CA-125* is often elevated in women with ovarian cancer. It is not known whether tumour markers become elevated early enough in the natural history of occult ovarian cancer to provide adequate sensitivity for screening. Elevated *CA-125* levels can also be observed in non-gynaecological conditions, the first trimester of pregnancy and endometriosis.

Multimodality screening using both ultrasound and *CA-125* is currently being trialled.

Special groups

Groups at high risk for ovarian cancer include:

- Women with a strong family history of breast and/or ovarian cancer (two or more first-degree relatives and/or a relative with cancer before menopause) are a high-risk group who may carry a mutation of the *BRCA1* and *BRCA2* genes. These women have a risk of ovarian malignancy of up to 50 per cent.
- Women with a strong family history of colon cancer (at least three affected family members in at least two successive generations, with one case below age 50 years) may be at increased risk for endometrial and ovarian malignancy because they carry a mismatch repair gene mutation. These women have a risk of up to 10 per cent for ovarian cancer and 50 per cent for endometrial cancers.

Recommendations

Routine screening of asymptomatic women for ovarian cancer by ultrasound, CA-125 or pelvic examination is not recommended by any official body.²⁻⁹ The universal view amongst these groups is that there is fair evidence to exclude screening for ovarian cancer by any means for pre- and post-menopausal women.

Although there is no evidence available regarding screening in high risk women, it is thought that these women should have CA -125 levels measured and undergo transvaginal ultrasound at least on a yearly basis. Women who may have gene mutations should be referred to family cancer clinics for counselling.

Prevention

The risk factors for ovarian cancer are not well enough understood to recommend any preventive measures.

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PROSTATE CANCER - SUMMARY

Recommendation: Level I (Insufficient Evidence)

The issue of screening for prostate cancer is controversial at the moment. Currently, most organisations in Australia and overseas do not recommend the screening of asymptomatic men for prostate cancer. If testing is done, the health professional should discuss the potential benefits, side effects and questions regarding detection of early prostate cancer and treatment so that men can make informed decisions about testing.

Methods of screening

Digital rectal examination (DRE) and serum prostate specific antigen (PSA).

Frequency of screening

Unknown

State of evidence

This issue is controversial. For prostate cancer no controlled trials evaluating the impact of screening on morbidity and mortality have yet been completed. The Cancer Council states that the current evidence does not support population screening of well men for prostate cancer. Individual men who decide to be tested should be able to do so on the basis of informed consent, having access to full information about the potential benefits and risks associated with testing.

The US Preventive Services Task Force found that while there is good evidence that PSA screening can detect early stage prostate cancer, there was mixed and inconclusive evidence that early detection improves health outcomes. Screening is associated with important harms, including frequent false-positive results and unnecessary anxiety, biopsies and potential complications of treatment of some cancers that may never have affected a patient's health. It concluded that evidence was insufficient to determine whether the benefits outweighed the harms for a screened population.

Special groups

Men with a strong family history of prostate cancer.

PROSTATE CANCER

Statistics

During 2002, prostate cancer was the second most common registered cancer in males in Western Australia.¹ There were 1 204 new cases reported, at an age standardised rate of 93 cases per 100 000 men per year, accounting for 26 per cent of all cancers in males. Prostate cancer is rare under the age of 50 and becomes much more common after the age of 65. About 1 in 9 men could be expected to develop prostate cancer before the age of 75 years.

Prostate cancer was responsible for 187 deaths in 2002 (12 per cent of all cancer deaths in males). The estimated lifetime risk of death due to prostate cancer in men was 1 in 113. It accounted for an estimated 337 years of life lost in males (about 2 years per death).

Methods of screening

Digital rectal examination (DRE) is the oldest screening test for prostate cancer. The predictive value of the DRE technique is limited because the examining finger can only palpate the posterior and lateral aspects of the gland.

The serum level of prostate specific antigen (PSA) is also measured as a test for prostate cancer. PSA levels can be raised due to a range of conditions, not only prostate cancer. Sensitivity and specificity of PSA for prostate screening depend on the value used to define an abnormal PSA test. With a cut off point of 4.0 ng/ml, the sensitivity is 63-83 per cent and specificity is about 90 per cent. A number of variations on the single PSA test are proposed, including assays for complexed PSA, PSA density (serum PSA divided by gland volume), age-adjusted PSA, rate of change in PSA over time, pro-PSA and changing the cut-off level for an abnormal test.

Transrectal ultrasound (TRUS) has a role in guiding tissue sampling during biopsy but is generally considered to be too invasive, costly and not sufficiently accurate for use by itself as a mass screening test.

Special groups

Men with a strong family history of prostate cancer are at elevated risk of the disease. The risk of prostate cancer increases rapidly with age, with the oldest men at greatest risk of having the condition.

Recommendations

As a result of the evaluation of prostate cancer screening against established criteria, the Australian Health Technology Advisory Committee (AHTAC) recommends against the screening of asymptomatic men for prostate cancer.² Prostate cancer screening, particularly the PSA test, is a rapidly evolving area and the position on screening may change when further evidence on the effectiveness of existing tests and treatments

becomes available. AHTAC recommends that a monitoring mechanism be put in place to ensure this position on screening is reviewed when significant developments occur. It also recommends that men being offered, or requesting, the PSA test must be fully informed of the limitations of the available tests and the possible further diagnostic and treatment choices with which they may be faced should they decide to proceed with the test. AHTAC recommends that screening tests for prostate cancer should not be used for non-medical purposes such as employment, insurance or migration.

Other organisations' recommendations for normal risk men

The Cancer Council Australia and the NHMRC do not support the routine use of PSA tests to screen well men for prostate cancer until evidence of benefit warrants development of a national official population screening program.^{3,4}

The Royal Australian College of General Practitioners does not recommend routine screening for prostate cancer with DRE or PSA.⁵

The position of the Urological Society of Australasia is that individual men aged 50-70 years with at least a 10-year life expectancy should have access to screening by annual DRE and PSA testing, after appropriate counselling regarding the potential risks and benefits of investigations and the controversies of treatment.⁶ It should be left to the individual doctor to decide whether to advocate testing in a man not requesting it. Population screening of asymptomatic men is not recommended.

The Canadian Task Force on the Periodic Health Examination considers there is insufficient evidence to include DRE or PSA testing in the periodic health examination for men over 50 years.⁷ Exclusion is recommended on the basis of low positive predictive value and the known risk of adverse affects associated with therapies of unproven effectiveness. They state that there is fair evidence to exclude routine screening with PSA from the periodic health examination of asymptomatic men over 50 years of age.

The US Preventive Services Task Force concluded there was insufficient evidence to recommend for or against routine screening for prostate cancer using PSA testing or DRE.^{8,9} It found that while there is good evidence that PSA screening can detect early stage prostate cancer, there was mixed and inconclusive evidence that early detection improves health outcomes. Screening is associated with important harms, including frequent false-positive results and unnecessary anxiety, biopsies and potential complications of treatment of some cancers that may never have affected a patient's health. It concluded that evidence was insufficient to determine whether the benefits outweighed the harms for a screened population.

The National Cancer Institute (US) found there was insufficient evidence to establish whether screening by DRE or PSA testing decreased mortality.¹⁰ Because potential harms of screening can be established, but the presence or magnitude of potential benefits cannot be established, the net benefit of screening cannot be determined.

The American Cancer Society believes that health care professionals should offer PSA testing and DRE yearly, beginning at age 50 years to men who have at least a 10 year life expectancy.¹¹ It recommends discussing the potential benefits, side effects and questions regarding early detection of prostate cancer and treatment so that men can make informed decisions about testing.

According to the American Cancer Society, the American College of Physicians, the American Society of Internal Medicine, the Centre for Disease Control and Prevention, the American Academy of Family Physicians, and the American College of Preventive Medicine, do not advocate routine testing for prostate cancer. They state that the National Comprehensive Cancer Network and the American Urological Association do recommend that health care professionals offer men over 50 years the option of PSA and DRE.

Prevention

The risk factors for prostate cancer are not well enough understood for any preventive activities to be recommended.

References

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Recommendations for screening for specific cancers:

TESTICULAR CANCER - SUMMARY

Recommendation: Level I (Insufficient Evidence)

There is insufficient evidence to establish a clear recommendation for or against screening for testicular cancer in the general population.

Method of screening

Physician palpation of the testes and/or self-examination of the testes by the patient.

Frequency of screening

Unknown for physician palpation, monthly for self-examination.

State of evidence

No evidence exists on which to base a recommendation for or against screening for testicular cancer.

Special groups

Males with undescended testis, gonadal dysgenesis, Klinefelters syndrome, father or identical twin with testicular cancer, or a history of testicular cancer in the contralateral testis.

TESTICULAR CANCER

Statistics

During 2002, testicular cancer was the seventeenth most common registered cancer in males in Western Australia.¹ There were 64 new cases reported at an age standardised rate of 6.0 cases per 100 000 men per year, accounting for about 1.4 per cent of all cancers in males. Testicular cancer is predominantly found in young men, but some cases occurred in older men in 2002.

Testicular cancer is a very rare cause of death with only 1 death due to this cancer reported in WA in 2002.

Methods of screening

The two screening tests proposed for testicular cancer are physician palpation of the testes and self-examination of the testes by the patient. Detection of a palpable mass constitutes a positive test. No studies have been done to determine the accuracy of testicular examination, whether the examination is done by medical professionals or by patients.

Special groups

Males with cryptorchidism have 3 to 17 times the average risk of cancer of the testis even if the undescended testis has been surgically corrected. There is also an increased risk in males with gonadal dysgenesis, Klinefelter's syndrome, father or identical twin with testicular cancer, or a history of testicular cancer in the contralateral testis.

Recommendations

There is insufficient evidence to establish a recommendation for or against screening for cancer in the general population. Screening would be very unlikely to decrease mortality substantially since therapy is so effective, even for advanced stages of disease.

Monthly self-examination is sometimes recommended for high-risk men, but no evidence exists for or against this practice.

Other organisations' recommendations for normal risk men

The National Health and Medical Research Council,² the US Preventive Services Task Force,³ the National Cancer Institute (US),⁴ the Canadian Task Force on the Periodic Health Examination,⁵ and the Royal Australian College of General Practitioners⁶ all agree that there is insufficient evidence that screening normal risk men is useful. The American Cancer Society agrees that there is no medical evidence to suggest that, for men with average risk of testicular cancer, monthly examination is any more effective than simple awareness and prompt medical evaluation.⁷ However, they do recommend that examination of a man's testes is included in a regular cancer-related check-up.

Prevention

There are no known strategies for preventing testicular cancer.

References

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PART 3

Genetic Services of Western Australia - Familial Cancer Program

The Familial Cancer Program is a state-wide service at King Edward Memorial Hospital, Subiaco. The program provides a comprehensive service to families with a history of:

- Bowel cancer: eg. Familial Adenomatous Polyposis (FAP), Hereditary Non-Polyposis Colorectal Cancer (HNPCC).
- Breast and ovarian cancer
- Syndromes: Peutz-Jeghers Syndrome, Von Hippel-Lindau Syndrome, Cowden Syndrome, Li-Fraumeni Syndrome and Multiple Endocrine Neoplasia (MEN1 and MEN2).

These services are free-of-charge to Medicare card holders.

The service incorporates counselling, education, genetic testing and management for individuals and their families who have a family history of cancer.

Familial cancer

Familial cancers account for a small percentage of all cancers. Less than one in 20 people affected by cancer do so because they have inherited an altered gene.

The following features are suggestive of a hereditary disposition of developing cancer:

- Family member affected at a relatively young age
- Multiple cancers in one affected individual
- Several family members affected on the same side of the family.

Genetic consultation

Genetic consultation is a confidential service provided by a team of genetic counsellors and geneticists who work together to provide an individual or family with current information about familial cancers.

Genetic consultation offers the following:

- Provides the latest information about inherited cancers
- Determines the risk of an individual developing cancer based on family history
- Identifies families where genetic testing is appropriate
- Recommends surveillance guidelines for those at risk
- Provides information on early detection and lifestyle strategies to maintain good health and minimise risk.

Please send your referral to:

Familial Cancer Program
Genetic Services of Western Australia
374 Bagot Road
SUBIACO WA 6008
Tel: (08) 9340 1603
Fax: (08) 9340 1525
fcp@health.wa.gov.au

Part 4

Useful contacts

The Cancer Council Western Australia

46 Ventnor Avenue

WEST PERTH WA 6005

Telephone: (08) 9212 4333; Fax: (08) 9212 4334

inquiries@cancerwa.asn.au

www.cancer.asn.au

The Cancer Council is the peak cancer organisation in Western Australia. It provides a comprehensive range of services across the community. Some of these are listed below. To find out more about the Council's services please contact the Cancer Helpline on 13 11 20, visit our website at www.cancerwa.asn.au or email inquiries@cancerwa.asn.au

- Cancer Helpline - cancer information and support for patients, carers, family and health professionals. Open weekdays 8am to 8pm, Saturdays 9am to 3pm.
- Cancer Counselling Service - specialist counselling service for individuals, couples, families (subsidised fees apply). Also telephone counselling service and nominated counsellors working in regional areas.
- AH Crawford Lodge - Perth based accommodation for country patients and their carers visiting for cancer treatment.
- Cottage Hospice - purpose built facility in Shenton Park providing specialist palliative care service.
- Day Therapy Centre - based in Shenton Park and providing day respite for people living with cancer.
- Wig library - provision of wigs to anyone undergoing cancer treatment.
- Cancer Support Service-coordinated local provision of emotional and practical support for cancer patients and their families.
- Fresh Start quit smoking courses - community based courses with trained facilitators.
- Education and prevention - providing range of resources to support prevention and early detection work in cancer.

**Familial Cancer Program
Genetic Services of Western Australia**

374 Bagot Road

SUBIACO WA 6008

Telephone: (08) 9340 1603; Fax: (08) 9340 1525

fcp@health.wa.gov.au

A comprehensive clinical and counselling service for persons at increased genetic risk of certain cancers. This is free service funded by the Department of Health.

Western Australian Clinical Oncology Group

46 Ventnor Avenue

WEST PERTH WA 6005

Telephone: (08) 9212 4377, (08) 9381 4515; Fax: (08) 9212 4399

wacog@cancerwa.asn.au

A multidisciplinary group of cancer clinicians formed to advise The Cancer Council Western Australia and the Department of Health on all aspects of cancer control.

National Breast Cancer Centre (local contact)

c/o The Cancer Council Western Australia

46 Ventnor Avenue

WEST PERTH WA 6005

Telephone: (08) 9212 4348; Fax: (08) 9242 4399

director@nbcc.org.au

To order resources from NBCC: Freecall 1800 624 973

The NBCC has publications available including research and data reviews, reports and discussion papers, guidelines and recommendations and a range of resources for well women and women diagnosed with breast cancer. Publications are based on the most recently available published evidence.

Women's Cancer Screening Services

Health Department of Western Australia

9th Floor Eastpoint Plaza

233 Adelaide Terrace, Perth WA 6000

BreastScreen WA the state's free breast x-ray screening service for women over 40 years of age. Has several metropolitan and mobile units for the country. Appointments are necessary. Brochures on breast cancer are also available, some in other languages.

Telephone 13 20 50 for appointments.

Cervical Cancer Screening Program provides brochures on cervical screening (Pap smear test). Also operates the Cervical Cytology Registry which sends reminder letters for overdue Pap smears.

Telephone: (08) 9237 6900 for further information.

Quit Line

Initiative of the Department of Health WA and the Alcohol and Drug Information Service

Telephone: 13 18 48 (cost of a local call)

24 hour 7 days a week service.

Information for the public and health professionals on all aspects of the effects of smoking and smoking control are available including smoking cessation and advice, student assistance, library facilities and background information on smoking and health.

Western Australian Cancer Registry

Health Information Centre, Department of Health WA

PO Box 8172

Perth BC WA 6849

Telephone: (08) 9222 4022; Fax: (08) 9222 4236

wacanreg@health.wa.gov.au

www.health.wa.gov.au/wacr/

The Western Australia Cancer Registry is part of the Department of Health WA, and collects information about cancers diagnosed in WA. The reporting of cancer to the Department has been a legal requirement under the Health Act since 1981.



Department of Health
Government of Western Australia

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