


**AAPM Staff Development Day - 4 June 2011**

**Innovations in Cancer Screening**

**Cancer Screening Services Branch  
Queensland Health**


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**Australian Population Screening Framework**

- Endorsed by Australian Health Minister's Advisory Group (AHMAC) October 2008
- Inform decision makers on key issues for assessing potential screening programs for Australia:
  - criteria to assess population screening program; and
  - key principles for implementation and management of screening programs
- WHO defines screening as the presumptive identification of unrecognised disease or defects by means of tests, examination or *other* procedures.
- Screening is intended for all people in an identified target population, who have no symptoms of disease or condition. The process can identify:
  - a pre-disease abnormality;
  - early disease; or
  - disease risk makers.

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- *Population based screening* test offered systematically to a target group within a framework of agreed policy, protocols, quality management, monitoring and evaluation.
- *Opportunistic case-finding* – test offered to an individual without symptoms when presenting to a health care provider for reasons unrelated to that disease

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### **WHO Principles of Early Disease Detection**

**Condition:**

- 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

**Test:**

- There should be a suitable test or examination
- The test should be acceptable to the population

**Treatment:**

- There should be an accepted treatment for patients with recognised disease

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## **WHO Principles of Early Disease Detection (cont'd)**

### Screening Program:

- There should be an agreed policy on whom to treat as patients
- Facilities for diagnosis and treatment should be available
- The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole
- Case-findings should be a continuing process and not a 'once and for all' project

## **WHO Principles of Early Disease Detection (cont'd)**

### Assessment:

- Systems should be in place for evidence based follow up assessment of all people with a positive screening test regardless of rurality, ethnicity, socio-economic status or disadvantage status.

### Treatment:

- The treatment must be effective, available, easily accessible and acceptable to all patients with the recognised disease or condition.

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## **Evidence based Screening Programs in Australia**

- BreastScreen Australia Program
  - BreastScreen Queensland Program
- National Bowel Cancer Screening Program
  - Queensland Cervical Screening Program
- National Cervical Screening Program
  - Queensland Bowel Cancer Screening Program

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The logo for BreastScreen Queensland, consisting of two overlapping ovals, one pink and one purple, to the left of the text. The word "BreastScreen" is in a large, bold, purple font, and "Queensland" is in a smaller, purple font below it.

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### Breast Cancer in Queensland in 2007

- 2469 new cases of female breast cancer (24 in males)
- 76% (1878) occurred in women over 50
- 498 deaths in females (3 in males)
- Represents 16% of all cancer-related deaths in females
- 88% of deaths occurred in women over 50

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- BreastScreen Queensland is part of the national population-based breast cancer screening program BreastScreen Australia established in 1991.
- The aim of the Program is to reduce the morbidity and mortality associated with breast cancer through the early detection of the disease in the eligible population.
- Screening and assessment services are offered free to women in the target age group 50-69 years. Women aged 40 to 49 years and women aged over 70 years are also able to access free screening services.
- Women are reinvited to screening every two years.

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- Reduced death rate by 28% among Queensland women from 1994-2006
- Five year survival increased from 74% in 1982-1988 to 89% in 2001-2006
- Current participation is 58.3% - target is 70% for women 50 – 69
- Now state-wide digital – PACS implementation commences in August 2011
- Population of target group to increase by up to 30% in the next 5 years – currently screening target 233,700 for 2010/11

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BreastScreen Queensland Locations and Service Types as at January 2011



Legend  
 ● Screening and Assessment Service ▲ Satellite Service ■ Mobile Service

BreastScreen Queensland Locations and Service Types in South-East Queensland as at January 2011



Legend  
 ● Screening and Assessment Service ▲ Satellite Service ■ Mobile Service

## Digital Mammography Technology

- Queensland was the first State to implement 'state-of-the-art digital mammography' statewide which has provided major benefits for Queensland women.
- Increases BSQ service capacity to screen more women as the entire screening procedure takes less time (approximately 15-20 minutes) as radiographers are able to immediately check the images on the equipment for technical quality.
- Major benefits for women in rural areas. Digital technology allows breast images to be processed and checked immediately so women will not need to travel to have their mammogram repeated if there is a technical issue in the processing

## Digital Mammography Technology (cont'd)

- The implementation of the new statewide Picture Archiving and Communication System (PACS) will allow digital images to be stored, transferred and read electronically.
- The introduction of the statewide PACS allows us to:
  - Introduce soft copy reading; and
  - Establish a statewide co-ordinated reading model

## **Statewide Coordinated Reading Model**

- Will ensure women receive a consistent high quality and timely reading service irrespective of where they live or the service they attend.
- Under the Model, quality and timeliness considerations determine where images are read, not the place of acquisition.

## **Statewide Coordinated Reading Model**

- A high quality statewide reading service
  - Harnessing the benefits of technology to ensure reliable, cost effective and sustainable reading across the State
- Significant gains in the timeliness of results
  - Reads batched for the next available reader statewide
  - Quicker results for women and their GP's
- Addresses regional radiologist shortages
  - No longer geographically bound
  - Women receive a consistent, high quality and timely reading service irrespective of where they live or the service they attend
  - Quality and timeliness considerations determine where images are read, not the place of acquisition.

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### **New Coordinated Reading Hub**

- Located at 15 Butterfield Street, Herston, Brisbane
- Provides additional reading room capacity to support population growth and demand.
- Overcomes:
  - challenges in securing regional radiology workforce as most readers located in South East Queensland; and
  - larger Brisbane Services have limited capacity to provide additional reading facilities

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### **Looking into the future**

- The PACS enables new models of service delivery to be developed such as the provision of remote assessment which would reduce travel for some women in rural and remote areas.

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11  
Screening  
&  
Assessment  
Services



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6  
Digitally  
Equipped  
Mobile  
Screening  
Units



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19  
Satellite  
Services

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One  
4WD

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## Queensland Cervical Screening Program

**PSR**  
Pap Smear Register


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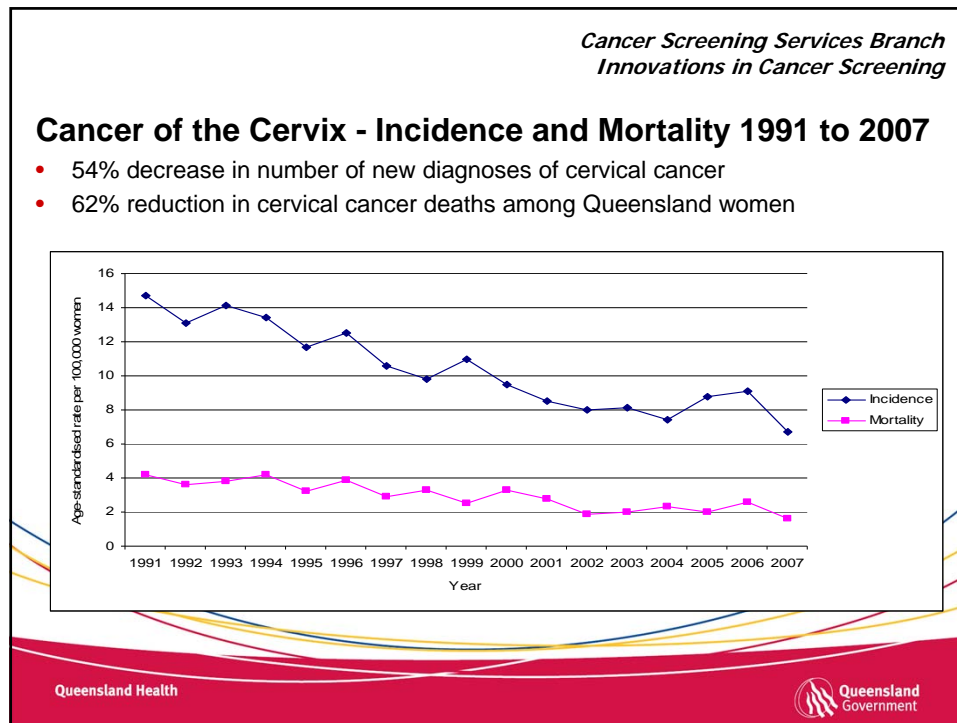
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### **Cervical Cancer in Queensland in 2007**

- 143 new cases of cervical cancer were diagnosed
- 13<sup>th</sup> most common cancer diagnosed in women
- 36 women died of cervical cancer
- 61% of deaths occurred among women over 60 yrs

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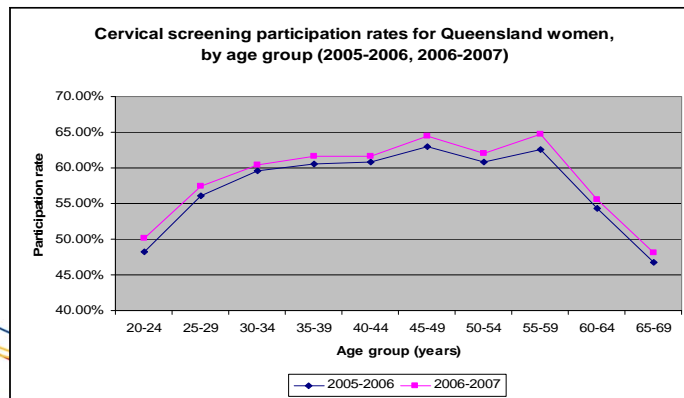
### Queensland Cervical Screening Program

- The Queensland Cervical Screening Program is part of the population based National Cervical Screening Program established in 1991
- Aim: to reduce the incidence and mortality associated with cervical cancer
- Target group: women 20-69 years who have not had a hysterectomy
- Women are recommended to have a Pap smear every two years
- Highly successful public health intervention

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## Issues and Innovations

- Participation is key to success
- Qld rate was 59.8% (2007/08)
- National average of 61.2%



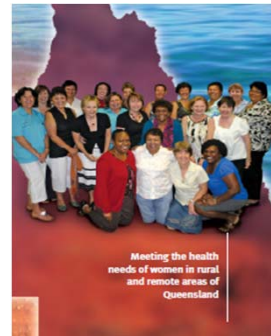
## Issues and Innovations (cont'd)

- Underscreened/unscreened women are often:
  - Older, especially > 55 years old
  - From outer metropolitan & remote areas
  - From low SES areas
  - Aboriginal and Torres Strait Islanders
- Strategies to address this:
  - the Mobile Women's Health Service
  - the Healthy Women's Initiative

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### Mobile Women's Health Service

- Unique service
- Aims to promote, maintain and improve the health and well being of rural and remote women who may be geographically or socially disadvantaged
- Comprised of 15 CNCs and 2 Aboriginal and Torres Strait Islander Health workers
- Service > 200 rural/remote locations
- Partnerships with other health services such as local GPs and RFDS



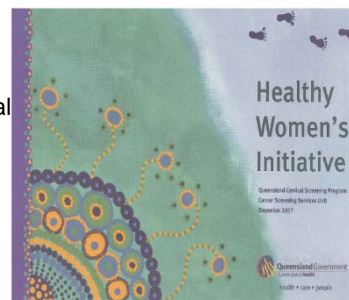
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### Health Women's Initiative

- AIM: To improve health outcomes for Aboriginal and Torres Strait Islander women by implementing an integrated healthy women's initiative focusing on women's health and cervical screening
- Key elements:
  - Community focused
  - Designated women's health workers
  - Holistic well women's health approach
  - Coordination of existing visiting outreach services




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- New knowledge
  - HPV is a necessary though not sufficient cause of cervical cancer
  - Increased understanding of natural history of HPV and subsequent changes to guidelines
- New approach
  - Introduction of primary prevention in Australia with the implementation of the National HPV Vaccination Program in 2007
- New technologies
  - Liquid-based cytology (Thin-Prep, SurePath)
  - Automated processing of slides – imagers
  - HPV DNA testing (high/low risk; typing)



JOIN THE FIGHT AGAINST CERVICAL CANCER  
I did


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Book your appointment now!

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### Assessment of Innovations

- Renewal of NCSP
- Aim - to ensure that all Australian women, HPV vaccinated and unvaccinated, have access to a cervical screening program that is acceptable, effective, efficient and based on current evidence
- Rationale
  - Policy is dated (1991) and out of step with international recommendations and evidence;
    - eg: Australian policy recommends commencement of screening much earlier than evidence supports
  - Advanced knowledge of HPV and new technologies
  - Need to consider vaccinated and unvaccinated cohorts

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## Key Aspects of Renewal

- Assess evidence to inform future models and pathways, the screening interval, age range and commencement for both vaccinated and non-vaccinated women.
- Cost-effectiveness of the screening pathway and program model.
- Enhance national data collection systems and registry functions.
- Assess the feasibility and acceptability of the renewed program for women.

**The Queensland Bowel Cancer Screening Program (QBCSP) is part of the National Bowel Cancer Screening Program (NBCSP)**

**NATIONAL  
BOWELCANCER**  
SCREENING PROGRAM

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- The aims are to reduce the incidence, morbidity and mortality of bowel cancer in the target population through the provision of high quality, cost effective and accessible bowel cancer screening and assessment colonoscopy
- The evidence of benefit of bowel cancer screening suggests that an organised population screening program using Faecal Occult Blood Testing (FOBT) could reduce deaths from bowel cancer by 15-33%



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## **Bowel Cancer in Queensland in 2007**

- 2785 new cases of colorectal cancer
- 93% cases occurred in people over 50 yrs
- More common in males (1,565) than females (1,220)
- 971 deaths (520 males and 451 females)
- Represents 13% of all cancer-related deaths in Qld
- 96% deaths occurred among people over 50 yrs


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## National Bowel Cancer Screening Program A short history

- Pilot Program 2002-2004 (Mackay, parts of Melbourne & Adelaide)
- Evaluation of pilot 2004-2005
- Phase 1 NBCSP August 2006 – June 2008
  - People turning 55 or 65 years eligible and pilot invitees
  - No funding to states/territories for colonoscopy services
- Phase 2 January 2008 – December 2010
  - People turning 50, 55 or 65 years
  - No re-screening of previous participants
  - No funding to states/territories for colonoscopy services

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## Benefits of Bowel Cancer Screening

Health benefits


- Removal of precancerous lesions (adenomas) and detection of early stage cancers = significantly better health outcomes
- Removal of polyps can prevent bowel cancer developing
- Currently fewer than 40% of bowel cancer are detected early

Economic benefits

- Shift to earlier cancer stage at diagnosis – lower treatment costs
- Expanded Program could save 230-325 lives per year by 2026 in Queensland (conservative estimate)
- FOBT highly sensitive triage tool for colonoscopy

Population benefits

- Will deliver significant benefits to the rapidly growing over 50's population segment - 93% cases & 96% deaths in 50+ years of age
- Only population screening program offered to men – will yield significant benefit as incidence and mortality higher in men

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## **Queensland Bowel Cancer Screening**

### **Innovative Model**

- Geographic implementation – 11 catchments
- FOBT invitations sent by Medicare Australia
- State funding for public sector assessment colonoscopies and some early infrastructure
- Gastroenterology Nurse Coordinator (GENC) QBCSP and Health Promotion Officer in each of the 11 catchments
- Authorised Provider model – public sector
  - designated QH facilities (29)
  - authorised providers (48 currently active)
- Quality assurance and reporting processes in place
- Clinical information system implemented (ESSS) being implemented

### **The Authorised Provider Model**

- Organised approach - manage demand within and across catchments - quarantined lists where possible
- Coordinated care – role of GENCs in coordinating services across catchment and individual patient care
- Implement consistency of practice including data collection and reporting
- Meet standards – quality, timeliness, data provision

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## Phase 2 Statistics to January 2011

**Australia**

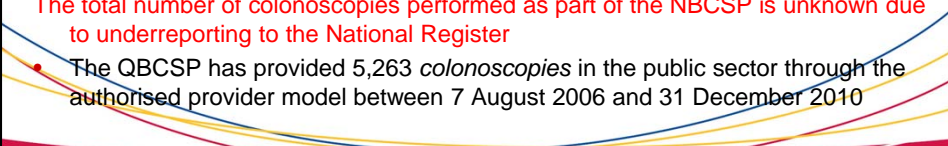
- 1,988,163 invitations sent
- 818,734 invitees (approx 41%) have participated
- 54,605 participants (6.7%) returned a positive FOBT


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- 377,670 invitations sent
- 154,462 invitees (approx 41%) have participated
- 9,036 participants (6%) have returned a positive FOBT

The total number of colonoscopies performed as part of the NBCSP is unknown due to underreporting to the National Register

- The QBCSP has provided 5,263 *colonoscopies* in the public sector through the authorised provider model between 7 August 2006 and 31 December 2010



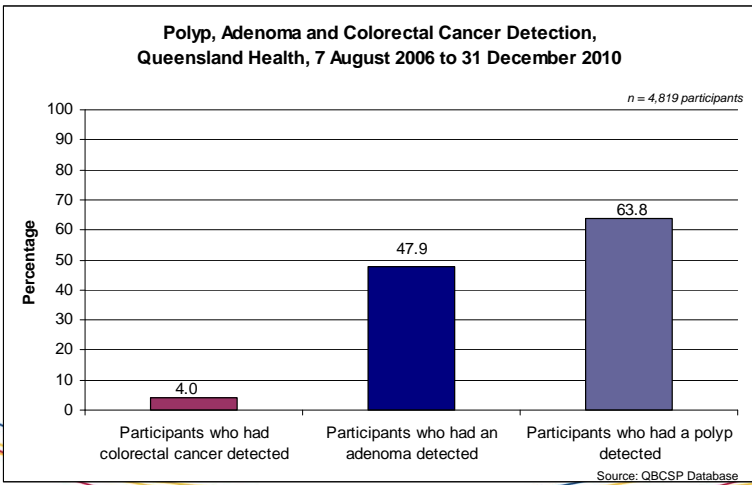
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## Colonoscopy statistics to 31 December 2010

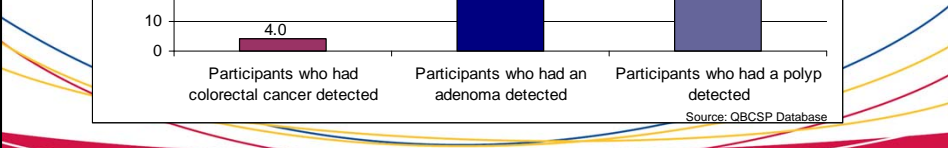
**Polyp, Adenoma and Colorectal Cancer Detection,  
 Queensland Health, 7 August 2006 to 31 December 2010**


*n = 4,819 participants*



Category	Percentage
Participants who had colorectal cancer detected	4.0
Participants who had an adenoma detected	47.9
Participants who had a polyp detected	63.8


Source: QBCSP Database



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- Phasing in of a fully implemented NBCSP for all Australians aged 50-74 years may occur in the next 5 years
- Maximise lives saved through early detection
- Reduce treatment costs – cost benefit analysis estimated at \$36,000 per life year saved
- In Queensland 1.95 million people eligible over 5 years – 7.6% have positive FOBT (66,833 participants) at 45% participation rate

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### **Opportunistic Case Funding**

- Test offered to an individual without symptoms when presenting to a health care provider for reasons unrelated to that disease.
- Applies to:
  - Prostate
  - Skin cancer

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## **Prostate Cancer**

- Each year in Australia approximately 3,300 men die as a result of prostate cancer
- Each year in Australia over 16,000 new cases are diagnosed
- There is currently no organised population-based screening program for prostate cancer
- Early detection & management of prostate cancer is complex

## **Position Statement Prostate Cancer Screening in Australia**

- Developed in 2010
- Jointly supported by Cancer Council Australia & Australian Population Health Development Principal Committee
- Unlike cancers of the bowel, breast and cervix there is insufficient evidence to support the benefits of population-based screening for prostate cancer
- Available tests for prostate cancer are digital rectal examination (DRE) and Prostate- Specific Antigen (PSA) test.
- Neither test has a high enough specificity or sensitivity to meet the WHO criteria.

## **Prostate Cancer Screening in Australia (cont'd)**

### General Messages

- Prostate cancer is a major health concern in Australia – causes 2<sup>nd</sup> highest number of cancers in men (after lung) and the most cancer cases (apart from non-melanoma skin cancer)
- Over 80% of new prostate cancer cases occur in men aged 60 and over. 97% of prostate cancer deaths occur in this age group

## **Prostate Position Statement**

### General Statements

- Current evidence indicates the PSA test is not suitable for population screening, as harms outweigh benefits
- The PSA test detects elevations in PSA in the blood which can indicate prostate changes
- The issue is that men with a healthy prostate can have an elevated level of PSA
- Additionally the PSA test can not distinguish which cancers are harmful and which are harmless.
- The other test available is Digital Rectal Examination (DRE)
- DRE involves manually checking for abnormalities through the rectum. Effectiveness is limited, as sections of the prostate are out of reach and small tumours may be undetectable

## Prostate Cancer

- The current advice is that men discuss their prostate health with their GP
- It is an individual decision between the man and his GP to undertake screening and can not be applied to populations

## Diagnosing Skin Cancer

- Skin cancer is the most common cancer in Australia
- Over 250,000 people are diagnosed with non-melanoma skin cancer each year
- Over 8,000 people are diagnosed with melanoma annually
- Diagnosing skin cancer can be difficult. In primary care settings sensitivity of clinical exam for diagnosing skin cancer is reported to range from 40%- 80%
- GPs – traditionally diagnosed & managed most skin cancers without referral
- 'Skin cancer medicine' has emerged
- 2005 study compared GPs and skin cancer clinic doctors in Queensland. Found both groups treat large numbers of skin cancers and diagnose these with high sensitivity. The two groups diagnosed skin cancer with similar accuracy (Youl, Badde, Janda, Del Mar et al)

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## **Opportunistic Case Finding and Skin Cancer**

- There is no official peak body in skin cancer medicine in Australia
- The Skin Cancer College of Australia & NZ (SCCANZ) was established by a group of doctors who recognised a need in 2005
- There is presently no mandatory training or accreditation although this has been investigated by the Australian Commission into Safety and Quality
- Focus of SCCANZ:
  - educating consumers about secondary prevention
  - Setting minimum standards and accreditation
  - Voluntary accreditation is being investigated but maybe costly for Practices
- Membership of the College is open to Practice Nurses who can join as members or associate members
- A two day training event for Practice Nurses is planned for June 2011. website: [www.sccanz.com.au/](http://www.sccanz.com.au/)

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## **Population Screening makes a major contribution to cancer control**

- With existing knowledge it is possible to prevent at least one third of cancers, a further third can be detected early and be effectively treated with the remaining third able to receive effective palliative care that can improve the quality of life of cancer patients and their families

*Director General WHO 2002*

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