Introduction of colorectal cancer screening in Australia
Survival by stage: South Australia

Survival by Dukes’ stage, South Australia, 1980-95

Screening using faecal occult blood tests

Four randomised trials:

– Minnesota USA hydrated tests, volunteer group, started 1975, published 1993
– Funen, Denmark; general pop, started 1985, published 1996
– Gothenburg, Sweden; general pop, started 1982, published 1994

*Australia should develop a program for colorectal cancer screening by FOBT for the average-risk population (well population aged over 50)*

*The program should commence with preliminary testing involving a number of pilot and feasibility studies*

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National Cancer Control Initiative proposals for a pilot study, 1998, 99

Involving 200+ stakeholders:

- Deliver the screening program within the existing system for service delivery
- Ensure high quality care
- Have a smooth interface between screening and diagnostic follow-up
- Collect robust data and develop and maintain a register
National Cancer Control Initiative proposals for a pilot study, 1998, 99

Some issues:

- Avoid the word ‘research’
- Invitation process from health insurance; reqd legislation
- Pilot areas decided by demographics
- Pilots to be managed directly by federal health department

- European results published 1996
- AHTAC report 1997
- Proposals for pilot studies 1998, 1999
• European results published 1996
• AHTAC report 1997
• Proposals for pilot studies 1998, 1999
• Peer-reviewed cancer clinical guidelines recommend biennial FOBT age 50 y and older, 1999
• Cancer Strategies Group highlights CRC screening as a priority, and conducts economic analysis: estimate $16,000 per DALY gained.

• Federal funding for pilot in budget May 2000
• Pilot projects start Nov 2002 – April 2003
Pilot sites

Subjects aged 50-74; one round of biennial screening; two immunochemical tests compared. Total invited 57,000
FEATURES OF THE PILOT

- Register based within the federal Health Insurance Commission
- Invitation and kits mailed to total of 57,000 people aged 55-74 in three areas chosen on demographic criteria; one reminder at 6 wks
- Self testing kits returned by mail
- Two immunochemical tests (Bayerdetect and Inforrn) compared
- FOBT results sent to participants, GPs and central register
- Phone helpline set up
Both tests require samples from each of two bowel motions.

**Immunochromosomal tests**

- **Heme**
  - Guaiac; peroxidase.
  - Interference by Meat, vegies, vitamin C, NSAIDs.
  - Detects bleeding from Stomach, small & large intestine.

- **Hemoglobin**
  - Immunochromosomal: specific to human globin
  - No interference.
  - Detects bleeding from large intestine.

*From: Prof G Young*
Advantages of immunochemical tests

- Make it easier for screenee and improve participation
  - Remove need for diet and drug restriction
- Improve sensitivity
- Improve specificity
  - Selectively target colonic bleeding
  - Avoid diet and drug interference
- Improve discrimination and quality control
  - Easier-to-read endpoint
  - Allow quantification
  - Allow automation

From: Prof G Young

Guaiac tests

- How to prepare for the test:
  - Do not consume red meat, any blood-containing food, cantaloupe, uncooked broccoli, turnip, radish, or horseradish for 3 days prior to the test.
  - You may need to discontinue drugs that can interfere with the test such as vitamin C and aspirin if possible. Check with your health care provider regarding medication changes that may be necessary.
Participation

- 56,907 invitations issued
- 25,840 (45.4%) completed FOBTs
- Mackay 57.5%, Adelaide 46.3%, Melbourne 39.9%
- Participation higher with Bayer detect 47.2% than Inform 43.6%
- Only local publicity

Participation by age & sex
Participation by centre

![Bar chart showing participation by centre for Mackay, Adelaide, and Melbourne.](chart1)

Participation by socio-economic group (post code)

![Bar chart showing participation by socio-economic group for Adelaide and Melbourne.](chart2)
Participation by preferred language

Positivity rates

- 56,007 invitations issued
- 27,064 (45.4%) completed FOBTs
- 25,668 (95%) satisfactory
- **Positivity rate 9.0 %**
- Positivity Bayer detect 8.2%, !nform 9.9%
Positivity by age, sex and test: overall 9%

Available data on subjects with positive tests

Colonoscopy (n = 1265)

- Cancer: 67 (5.3%)
- Advanced adenoma: 176 (13.8%)
Available data on 2308 subjects with positive tests

Colonoscopy (n = 1265)
• Cancer: 67 (5.3%)
• Advanced adenoma: 176 (13.8%)

Unknown outcome (n = 1035)
• No results retrieved for 1035

Colonoscopy referral in pilot: Adelaide

<table>
<thead>
<tr>
<th></th>
<th>Positive FIT, n=1437</th>
<th>Referred for colonoscopy</th>
<th>Referred for other</th>
<th>No referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>93.4%</td>
<td>1.8%</td>
<td></td>
<td>4.8%</td>
</tr>
<tr>
<td>Females</td>
<td>93.7%</td>
<td>2.3%</td>
<td></td>
<td>4.0%</td>
</tr>
</tbody>
</table>

From: Prof G Young
## Colonoscopy waiting times – pilot: Adelaide

<table>
<thead>
<tr>
<th>Phase of activity</th>
<th>Days waiting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Consultation to colonoscopy (d)</td>
<td>38.5</td>
</tr>
</tbody>
</table>

*From: Prof G Young*

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### Available data on all subjects with colonoscopy

**Positive FOBT (n = 1265)**
- Cancer: 67 (5.3%)
- Advanced adenoma: 176 (13.8%)
- Other adenoma: 75 (5.9%)

**Other referral by GP (n = 529)**
- Cancer: 2 (0.4%)
- Advanced adenoma: 19 (3.4%)
- Other adenoma: 21 (4.0%)
Conclusions from pilot studies

- Participation rates adequate, given little publicity
- Positivity rate high
- Referral for colonoscopy without positive FOBT of little value
- Symptom history not predictive – omit; FH only limited value
- Data systems for invitation reasonable
- Data systems for follow up inadequate

Some problem areas identified in pilot

- Invitation and consent package – too much information
- Collection of data – incomplete, slow
- Follow up safety net – clinical data system inadequate
- Communications between register, participants and clinicians often poor
- Quality issues related to colonoscopy and histopathology
Estimated cost-effectiveness

• Lifetime cost per life year gained $24,000

• Comparisons: breast screening $ 13,000

• cervix screening $ 44,000

If we build a program, will they come?
No-one likes sampling faeces

- This applies to specialists, family doctors, managers, and politicians also!
Dr Michael Woodridge, Australian federal minister of health:

“It took me five budgets to get the bowel screening program. I don’t think they thought paying someone to have something stuck up their bum would be politically popular”

The current national program

National Program

• Screening is resourced federally from funds separate to other medical care
• Federal funding to initiate the national bowel cancer screening program: $43 million over 4 years, 2005 budget.
• Uses Bayer immunochemical test, every 2 yrs. This is free. Follow-up colonoscopies in public sector, or private (likely some patient payment).
Current Eligibility Criteria

- People who:
  - are turning 55 or 65 years of age between May 1, 2006 and June 30, 2008, or
  - (Plus those were invited to participate in the Pilot Program)
  - This is 12% of target group aged 55-74

Some diversions on the way…

- Recommended that screening for indigenous population (ATSI) should start at age 45
Current initial National Program

- 380,000 people to be invited over 2 yrs
  - 230,000 55 year olds
  - 150,000 65 year olds
- Anticipated participation rate - 50%
- Anticipated FOBT positivity rate - 8%
  Thus, 7500 colonoscopies needed per year: 150 per week
  500 accredited colonoscopists: < 1 extra per week each
  ** screening only; ignores follow up

Future annual workload

3,200,000 Australians aged 55-74 years.

**FOBT screening (biennial, 50% uptake; 8% positivity rate)**
64,000 colonoscopies; 128 complications
2-3 extra scopes per week per colonoscopist

**Colonoscopic screening (10-yearly)**
160,000 colonoscopies (50% uptake); 320 complications
6-7 extra scopes per week per colonoscopist

Ignores follow up
Follow up of those with adenomas

- Finding adenomas currently means ongoing surveillance
  - Threshold for surveillance has huge impacts
  - Limited evidence-base for follow-up frequency

Conclusions
Australian experience

• Objective has been to produce a whole population, cost controlled, centrally organised and monitored program

Issues of central control

• All funding steps have required specific items in the annual federal budget

• Evidence of benefit – 1996
• Aust recommendation to proceed – 1998
• Pilot program protocol – 1998, 1999
• Funding for pilot – 2000
• Pilot starts – 2002
• Pilot finishes – 2005
• Program for 12% of eligible group starts, 2006
Pilot studies of colorectal cancer screening: $2 million per year for 4 years
Health care costs of colorectal cancer: $200 million per year
Increase in costs of colonoscopies: $4 million per year

![Graph showing number of colonoscopies and Medicare cost over years]

**Australian experience**

- Objective has been to produce a whole population, cost controlled, centrally organised and monitored program

- Alternative would be making tests and follow up available with subsidy on the Medical Benefits Schedule, and educate the public, family doctors, and specialists
A contrast

- USA experience
  - Prop of pop screened in 2004 - 57%
    (FOBT 1 yr 18.7, endoscopy 10 yr 50.6)

- Australian experience
  - Prop of pop screened in 2006 - <10 % ?

Thank you

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SCREENING PATHWAY

No Response
• Reminder at 6 wks
• Re-invite next screening round

Register identifies target population

Register sends invite with FOBT

Opt off
• Permanently
• For a period of time.

Participant completes FOBT
Sends directly to laboratory

If inadequate sample or Indeterminate Result: Register Invites to repeat test.

Path Lab sends FOBT result to:
• Participant;
• GP (if nominated)
• National Register

Negative FOBT
• Advised to see GP if has or develops symptoms.
• Re-invite next screening round.

Positive FOBT result:
• Advised to see GP within two weeks