

**WHY BOWEL CANCER SCREENING IS A NEEDED  
HEALTH CARE INVESTMENT**

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## Summary

This year 17,000 Australians will be diagnosed with bowel cancer, every week 80 people will die from this disease, and the cost of treatment will hit \$1 billion. So it is shocking to realise that Australia's nascent National Bowel Cancer Screening Program (NBCSP) has run out of funding and ground to a halt.

Australian studies clearly highlight how a fully implemented, population-based bowel screening program could halve the number of deaths through early detection, in many cases preventing the onset of cancer by detecting pre-cancerous growths. A national screening program would cost \$140 million per year, but preventing the onset of cancer will save money as well as lives. Removing a precancerous polyp costs approximately \$1,600, whereas treatment at a public hospital for bowel cancer can cost more than \$70,000.

The costs of treating bowel cancer have risen more than fourfold over the past decade and are set to rise further as the cost of new biologic drugs – the very medicines that Health Minister Nicola Roxon now says cannot be listed on the Pharmaceutical Benefits Scheme unless cost offsets are found – averages \$50,000 per case for advanced cancers.

Ironically it was the Labor Party in opposition which pushed the Howard Government into introducing the NBCSP in 2005, and it was a 2007 Labor election policy that promised a fully implemented screening program as part of a health-care reform plan focused on intervening early, preventing serious illnesses where possible, and reducing pressure on hospitals.

Now the NBCSP languishes and there is a very real potential that the money spent to date, around \$125 million, will be wasted, unless funds are forthcoming in the 2011-012 budget.

Almost six years have elapsed since this program first commenced, and yet it has never been more than piecemeal, lacking an implementation plan, adequate resources and effective communication mechanisms with the public and the doctors who treat them. The funding provided was always considerably less than the real costs of a full program and was a major constraint on program implementation options. For example, no specific federal funding was provided to cover the costs of follow-up colonoscopies for people with positive faecal occult blood tests (FOBTs).

But the program will need more than just funding, it will need a renewed commitment to full implementation and ongoing support. The screening programs for cervical and breast cancer were both fully rolled out within five years; there is no reason why this cannot be the case for the screening program for bowel cancer, which claims more lives.

Aside from the serious failure to ensure that everyone who needed a colonoscopy could get one, there were other acknowledged problems with the early program. Of concern is the fact that those most at risk are least likely to participate. Men are less likely to participate than women, despite the fact that they are at higher risk for bowel cancer. Participation rates are also lower for socioeconomically disadvantaged groups compared to more affluent groups, and people from

metropolitan and remote areas compared to those from rural areas. Those who speak a language other than English at home and Indigenous people are also under-represented.

There were also significant deficiencies in the ability to track the outcomes from colonoscopy and from pathology on samples taken. It seems that many patients are lost to follow-up. Yet it is critical for the success of the program and for improved health outcomes that all patients identified as having possible indications for bowel cancer are followed through to resolution, and the results are recorded. Failure to do this means that the success and the cost-effectiveness of the program can never be factually established.

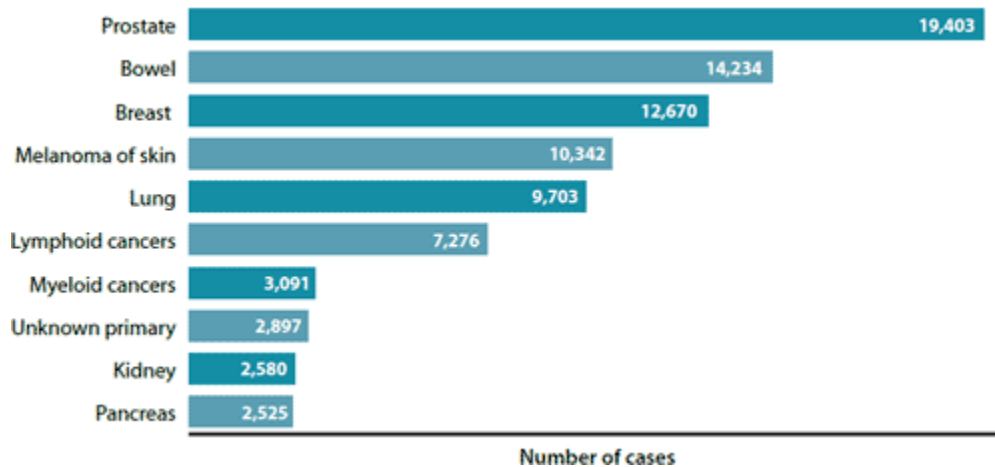
We have been warned that the May budget will be tight, with strict fiscal rules. However with Australia facing an aging population, and hence an increased burden of bowel cancer, restoring the NBCSP is a sound investment in the health of all Australians and in the long-term health of the budget.

## Bowel cancer in Australia

Australia has one of the highest incidence rates for bowel cancer, surpassing that of both the United Kingdom and the United States.<sup>1</sup>

Bowel cancer was the second most common type of cancer diagnosed in Australians in 2007, after prostate cancer (excluding basal and squamous cell carcinomas of the skin). In 2007, 14,234 cases of bowel cancer were diagnosed.<sup>2</sup> It is predicted that this year the number of cases will be around 17,000, and the incidence will continue to rise as the population ages.<sup>3</sup>

### The 10 most commonly diagnosed cancers, Australia, 2007



Source: AIHW Australian Cancer Database.

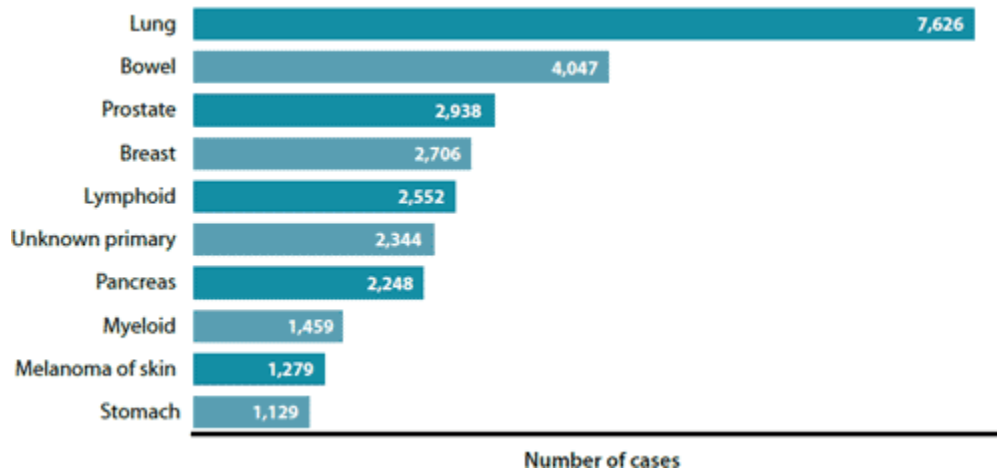
<sup>1</sup> Bishop J, Glass P, Tracey E, et al. (2008) Health Economics Review of Bowel Cancer Screening in Australia. Cancer Institute NSW. Accessed at <http://www.bowelcanceraustralia.org/bca/images/pdf/NSWCI%20Bowel%20Cancer%20Screening%20in%20Australia.pdf>

<sup>2</sup> Australian Institute of Health and Welfare. Cancer. Accessed at <http://www.aihw.gov.au/cancer/index.cfm>

<sup>3</sup> Australian Institute of Health and Welfare (2005). Cancer Incidence Projections Australia 2002 to 2011. Accessed at <http://www.aihw.gov.au/publication-detail/?id=6442467752>

Bowel cancer is the second leading cause of cancer deaths after lung cancer (excluding basal and squamous cell carcinomas of the skin), with 4,047 deaths in 2007.<sup>4</sup> This equates to around 80 Australians dying each week from the disease.<sup>5</sup>

### The 10 most common causes of death from cancer, Australia, 2007



Source: AIHW National Mortality Database.

Bowel cancer can be treated successfully if detected in its early stages, but currently fewer than 40 per cent of bowel cancers are detected early.<sup>6</sup> The chance of survival from bowel cancers varies significantly according to when the cancer is diagnosed. Detection at Stage A (defined as when the cancer is confined to the bowel wall) allows for about a 90 per cent five-year survival rate, while Stage D (once the cancer metastasises) allows for around a 10 per cent five-year survival rate. In the majority of cases it takes between five to ten years for bowel cancer to develop from an identifiable precancerous phase (a polyp or adenoma).<sup>7</sup>

It is this 5-10 year window that characterises bowel cancer as an ideal candidate for a screening program and provides huge opportunities for reducing bowel cancer mortality rates.

<sup>4</sup> Australian Institute of Health and Welfare. Cancer. Accessed at <http://www.aihw.gov.au/cancer/index.cfm>

<sup>5</sup> Department of Health and Ageing. National Bowel Cancer Screening Program. Accessed at <http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/bowel-about>

<sup>6</sup> Ibid

<sup>7</sup> Riley N. Colorectal Cancer in Australia: the desperate need for education, prevention and early detection. Cancer and Bowel Research Trust. Accessed at [http://www.cancerresearch.org.au/Colorectal\\_Cancer\\_Report.pdf](http://www.cancerresearch.org.au/Colorectal_Cancer_Report.pdf)

Australia already has screening programs for breast cancer and cervical cancer. For context, breast cancer was the third most commonly diagnosed and fourth most common cause of cancer deaths in 2007.<sup>8</sup> Cervical cancer did not make it into the top ten cancers.

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<sup>8</sup> Australian Institute of Health and Welfare. Cancer. Accessed at <http://www.aihw.gov.au/cancer/index.cfm>

## Why we need a bowel cancer screening program

### Clinical benefits – improved survival rates

As noted above, bowel cancer survival rates increase dramatically when the diagnosis is made early. The Cancer Council of Australia estimates that a fully implemented bowel cancer screening program for everyone aged 50 and over would prevent up to 30 deaths each week.<sup>9</sup> Recent modeling, using a 40 percent screening rate (which reflects the current uptake rate), indicates that 300-500 deaths per year could be prevented by a screening program in 50 to 74 year olds.<sup>10</sup> A meta-analysis of three large international randomised controlled trials performed by the Cancer Institute NSW showed that biennial screening is associated with a 13–17 percent reduction in bowel cancer mortality rates during follow-up periods between 11.7 and 18 years.<sup>11</sup>

### Economic benefits – reduced costs to the health care system

As improvements in bowel cancer treatment have been made and lives have been extended, the cost of treating bowel cancer has risen. This trend will continue over the coming years, particularly as biologic treatments become more available.<sup>12</sup> Diagnosing and treating bowel cancer early is one way to help mitigate these rising costs. An analysis of the cost of treatment showed that when compared to Stage A cancer, the cost of treating Stage B, C or D was increased by 2.7, 3.9 and 3.4 fold, respectively.<sup>13</sup> It is estimated that the cost of bowel cancer will be \$1 billion in 2011, a fourfold increase over the past decade.<sup>14</sup>

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<sup>9</sup> Cancer Council Australia pre-budget submission 2011-12. Accessed at [http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer\\_Council\\_Australia\\_prebudget\\_submission\\_2011\\_12.pdf](http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer_Council_Australia_prebudget_submission_2011_12.pdf)

<sup>10</sup> Pignone MP, Flitcroft KL, Howard K et al. (2011) Costs and cost-effectiveness of full implementation of a biennial faecal occult blood test screening program for bowel cancer in Australia. *MJA* 194 (4): 180-185. Accessed at [http://www.mja.com.au/public/issues/194\\_04\\_210211/pig10935\\_fm.html](http://www.mja.com.au/public/issues/194_04_210211/pig10935_fm.html)

<sup>11</sup> Bishop J, Glass P, Tracey E, et al. (2008) Health Economics Review of Bowel Cancer Screening in Australia. Cancer Institute NSW. Accessed at <http://www.bowelcanceraustralia.org/bca/images/pdf/NSWCI%20Bowel%20Cancer%20Screening%20in%20Australia.pdf>

<sup>12</sup> Kosmider S, Field KM, Ananda S & Gibbs PF. (2009) Escalating costs of treating colorectal cancer (CRC) and cost effectiveness of faecal occult blood test (FOBT) screening. Poster presentation 2009 Gastrointestinal Cancers Symposium, American Society of Clinical Oncology. Accessed at [http://www.asco.org/ascov2/Meetings/Abstracts?&vmview=abst\\_detail\\_view&confID=63&abstractID=10494](http://www.asco.org/ascov2/Meetings/Abstracts?&vmview=abst_detail_view&confID=63&abstractID=10494)

<sup>13</sup> Ibid

<sup>14</sup> Cancer Council Australia pre-budget submission, 2011-12. Accessed at [http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer\\_Council\\_Australia\\_prebudget\\_submission\\_2011\\_12.pdf](http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer_Council_Australia_prebudget_submission_2011_12.pdf)

Recent estimates suggest that the lifetime costs of care for metastatic bowel cancer in Australia have increased from \$6,000 to more than \$70,000, which includes a substantial component from both Medicare and the Pharmaceutical Benefits Scheme.<sup>15</sup> On this basis even a 10 percent conversion from advanced cancer to local cancer could be expected to save \$27 million annually in medical costs.

### Cost effectiveness of screening

As part of the final evaluation report on the pilot program<sup>16</sup> M-TAG Pty Ltd was asked to undertake an evaluation of the cost-effectiveness and financial impact of establishing a national screening program, based largely on the preliminary data from the pilot.

This evaluation found that for a biennial screening program using immunochemical faecal occult blood testing (FOBT):

- For a target population aged 55–74 years, at the pilot participation rate of 45.4 percent, the estimated cost per additional life year saved was \$24,000.
- For a target population aged 50-74 years, at the pilot participation rate of 45.4 percent, the estimated cost per additional life year saved was \$20,000.

The evaluation claimed that these estimates were conservative because there would be a further cost saving due to the reduction in current ad hoc 'screening colonoscopies' currently conducted in the average-risk population. They were also based on the outcome data collected during the pilot, which could be considered the minimum number of cancers and advanced adenomas detected in the pilot, as the register data included only 50 percent of referred follow-up colonoscopies at the time of the overall evaluation.

However, this preliminary cost effectiveness analysis is not applicable to the program as currently operated and there are no published data on the cost-effectiveness of one-off screening of individuals aged 50, 55 and 65 years.

There are several other Australian studies that show that a biennial screening program using FOBT is cost effective. These include:

- A 2004 study<sup>17</sup> found that a minimum or 'base program' of screening those aged 55 to 69 years could avert 250 deaths every year at a gross cost of \$55 million and a gross

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<sup>15</sup> Ibid

<sup>16</sup> Department of Health and Ageing (2005). The Australian Bowel Cancer Screening Pilot Program and Beyond: Final Evaluation Report. Screening Monograph No.6/2005. Accessed at [http://www.health.gov.au/internet/screening/publishing.nsf/Content/2DDFA95B20302107CA2574EB007F7408/\\$File/final-eval.pdf](http://www.health.gov.au/internet/screening/publishing.nsf/Content/2DDFA95B20302107CA2574EB007F7408/$File/final-eval.pdf)

<sup>17</sup> Stone CA, Carter RC, Vos T & John JS. (2004) Colorectal cancer screening in Australia: an economic evaluation of a potential biennial screening program using faecal occult blood tests. Aust NZ J Pub Health 28(3):273-282. Accessed at <http://www.ncbi.nlm.nih.gov/pubmed/15707175>

incremental cost-effectiveness ratio of \$17,000 per disability-adjusted life year (DALY) . Extending the program to include 70 to 74-year-olds was found to be a more effective option (cheaper and higher health gain) than including 50 to 54-year-olds.

- A study by the Cancer Institute NSW estimated cost per life-year saved of biennial screening introduced as people turn 55 and 65 to be \$48, 921.<sup>18</sup> Further estimates showed that screening between 55 and 74 years (where all people were initiated at 55 years) to produce costs of \$41,321 per life-year saved. When screening was initiated at 50 years, the costs per life-year saved were \$36,080 and when initiated at 45 years, \$44,955.
- A 2011 study estimated the gross cost of a biennial FOBT program in 50 to 74 year olds to be \$150 million per year and the undiscounted cost per life-year saved to be \$25,000 – \$41,667.<sup>19</sup>

Another Australian study<sup>20</sup> looked at the cost-effectiveness of screening for colorectal cancer using flexible sigmoidoscopy once every 10 years, compared with annual and biennial FOBT and colonoscopy once every 10 years, or no screening. It found that colonoscopy averted the greatest number of cases of colorectal cancer (35 percent), followed by flexible sigmoidoscopy (25 percent), and annual (24 percent) and biennial (14 percent) FOBT. Colonoscopy also averted the greatest number of deaths from colorectal cancer (31 percent), followed by annual FOBT (29 percent), flexible sigmoidoscopy (21 percent) and biennial FOBT (19 percent). Flexible sigmoidoscopy was the most efficient in terms of cost per life-year saved (\$16,801), followed by colonoscopy (\$19,285), biennial (\$41,183), and annual (\$46,900) FOBT.

While these data could be used to argue for the use of colonoscopy as a screening tool, this comes with increased risks due to anaesthesia and almost certainly less public acceptance and availability than FOBT.

Compared to other government-funded cancer screening programs currently offered in Australia, the proposed bowel cancer screening program is cost-effective. The cost effectiveness figures for the BreastScreen Australia and the National Cervical Screening Programs have been reported as approximately \$9500 to \$16,000 and \$44,500 per life-year saved respectively.<sup>21</sup>

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<sup>18</sup> Bishop J, Glass P, Tracey E, et al. (2008) Health Economics Review of Bowel Cancer Screening in Australia. Cancer Institute NSW. Accessed at <http://www.bowelcanceraustralia.org/bca/images/pdf/NSWCI%20Bowel%20Cancer%20Screening%20in%20Australia.pdf>

<sup>19</sup> Pignone MP, Flitcroft KL, Howard K et al. (2011) Costs and cost-effectiveness of full implementation of a biennial faecal occult blood test screening program for bowel cancer in Australia. MJA 194 (4): 180-185. Accessed at [http://www.mja.com.au/public/issues/194\\_04\\_210211/pig10935\\_fm.html](http://www.mja.com.au/public/issues/194_04_210211/pig10935_fm.html)

<sup>20</sup> O'Leary BA, Olynyk JK, Munro Neville A & Platell CF. (2004). Cost-effectiveness of colorectal cancer screening: Comparison of community-based flexible sigmoidoscopy with fecal occult blood testing and colonoscopy. J Gastroenterology and Hepatology 9(1):38-47. Accessed at <http://www.ncbi.nlm.nih.gov/pubmed/14675241>

<sup>21</sup> Department of Health and Ageing (2005). The Australian Bowel Cancer Screening Pilot Program and Beyond: Final Evaluation Report. Screening Monograph No.6/2005. Accessed at [http://www.health.gov.au/internet/screening/publishing.nsf/Content/2DDFA95B20302107CA2574EB007F7408/\\$File/final-eval.pdf](http://www.health.gov.au/internet/screening/publishing.nsf/Content/2DDFA95B20302107CA2574EB007F7408/$File/final-eval.pdf)

## The history of the National Bowel Cancer Screening Program (NBCSP)

A pilot bowel cancer screening program was conducted between November 2002 and June 2004 in three sites: Melbourne (Victoria), Adelaide (South Australia), and Mackay (Queensland) to represent the ethnic, cultural and geographical diversity of Australian life. Approximately 56,907 people in selected postcodes were invited to participate in order to assess the acceptability, feasibility and cost effectiveness of home testing in people aged 55–74 years of age. Invitations to participate were posted with the immunological FOBT to the pilot populations, with a 45 percent response rate. Participation was significantly higher among women than men; overall, 47.9 percent of invited women responded and 43.8 percent of invited men.

By October 2004, 25,840 people had participated by returning their FOBT kits with 2,308 positive results (9 percent). Of the 1,273 participants who proceeded to colonoscopy, 67 cases of bowel cancer were identified and 217 people had precancerous lesions.<sup>22</sup>

The National Bowel Cancer Screening Program was first funded in the 2005-06 federal budget, when the Government provided \$37.5 million over three years (including \$4.0 million in capital funding), to phase in a screening program, commencing in August 2006. Initial screening was offered to Australians turning 55 or 65 years of age between 1 May 2006 and 30 June 2008, and to those who were involved in the Pilot Program.

The funding provided was considerably less than the real costs of a full program and was a major constraint on program implementation options. For example, no specific federal funding was provided to cover the costs of follow-up colonoscopies for people with positive FOBTs.

### Funding for National Bowel Cancer Screening Program, 2005-06 Budget (\$m)

	2005-06	2006-07	2007-08	2008-09	Total
Screening program	2.6	14.5	16.4	-	33.5
Capital funding	1.5	2.5	-	-	4.0
Total	4.1	17.0	16.4	-	37.5

The 2008-09 budget provided \$87.4 million / 4 years for the continued roll-out of the National Bowel Cancer Screening Program and its extension to people turning 50 between 2008 and 2010.

This new funding was a considerable increase on the \$16.4 million provided in 2007-08, but in a divergence from a true screening program, patients must still pay the costs not reimbursed by

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<sup>22</sup> The Australian Bowel Cancer Screening Pilot Program: Analysis of routinely collected screening data. Bowel Cancer Screening Pilot Monitoring and Evaluation Steering Committee, November 2004. Accessed at [http://www.health.gov.au/internet/screening/publishing.nsf/Content/07F167FBE9766BF9CA2574EB007F73E2/\\$File/alalysis-routine-data.pdf](http://www.health.gov.au/internet/screening/publishing.nsf/Content/07F167FBE9766BF9CA2574EB007F73E2/$File/alalysis-routine-data.pdf)

Medicare for needed follow-up doctors' visits and colonoscopies. At the time the Government said that it would address the issues around cost of and access to colonoscopies in the next set of Australian Health Care Agreements. While bowel cancer screening is a performance indicator required to be measured under the National Healthcare Agreements, there has been no further funding provided.

### **Funding for National Bowel Cancer Screening Program, 2008-09 Budget (\$m)**

<b>Measure</b>	<b>2007-8</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-22</b>	<b>Total</b>
National Bowel Cancer Screening Program	(\$16.4m)	\$30.8m	\$27.2m	\$29.4m	-	\$87.4m

The NBCSP faced major issues in May 2009 when it was discovered that FOBT kits sent to more than 475,000 people since December 2008 had a faulty solution in them that degraded red blood cells in warm weather. Replacement tests were not available until November 2009.

A news report from January 2010<sup>23</sup> stated that of the 321,422 Australians who had received the new kits to that date, 70,568 - or 20 per cent - had taken the test, and 4890 people had returned a positive result. This included 4,444 who had already received a negative or inconclusive result from the faulty kits. About five percent of people with a positive test can be expected to have cancer, so in this case around 220 people potentially had a delayed diagnosis. About 50 percent of people would have a precancerous condition that would need to be removed.

Medicare Australia stopped mailing out FOBT participation letters in December 2010.<sup>24</sup>

Almost six years have elapsed since this program first commenced, and yet it has never been more than piecemeal, lacking an implementation plan, adequate resources and effective communication mechanisms with the public and the doctors who treat them. Now it languishes and there is a very real potential that the money spent to date (around \$125 million) will be wasted. The screening programs for cervical and breast cancer were both fully rolled out within five years.

<sup>23</sup> Medew J. (2010) Bowel cancer screening tests reversed after bungle. Sydney Morning Herald, January 22. Accessed at <http://www.smh.com.au/lifestyle/wellbeing/bowel-cancer-screening-tests-reversed-after-bungle-20100127-myzi.html>

<sup>24</sup> Bowel Cancer Australia (2011) Media release. Accessed at [http://www.bowelcanceraustralia.org/bca/index.php?option=com\\_content&view=article&id=202&Itemid=268](http://www.bowelcanceraustralia.org/bca/index.php?option=com_content&view=article&id=202&Itemid=268)

## Data from the National Bowel Cancer Screening Program

### Participation rates and follow-up

The Australian Institute of Health and Welfare has produced a series of reports that provide information about participation rates and the outcomes of screening. However to date these reports cover only the period to January 2010. It is not clear how the issues around the distribution of faulty FOBT kits between 1 December 2008 and 8 May 2009 have been / will be resolved in program reports. All participants with a negative test result from a faulty kit were offered rescreening, but assessments of the program will have to take this issue into account. Moreover, given the time overlaps of these reports and the delay in reporting results regarding outcomes, it is very difficult to get an accurate picture of the success of this program.

**Table 1: Participation rates and outcomes for the National Bowel Cancer Screening Program, August 2006- January 2010.**

	Participation letters sent	Response rate	Responses FOBT +ve	GP visits (% FOBT +ve)	Colonoscopies (% FOBT +ve)	FOBT+ve with polyps, adenomas, suspected cancers	Cancers diagnosed
Aug 2006-Jul 2007	475,198	41.0%	7.0%	2484 (24.6%)	2118 (20.9%)	62.8%	4 confirmed
Aug 2006-Jun 2008	1,010,073	42.9	7.6	13,038 (43.2%)	18,984 (63.2%)	58.4%	752 suspected or confirmed
Jan 2008-Jan 2010	685,000	40.1	6.6	8,887 (49.4%)	13,727 (76.3%)	51%	120 confirmed 334 suspected

Data compiled from: Australian Institute of Health and Welfare & Australian Government Department of Health and Ageing. National Bowel Cancer Screening Program - annual monitoring reports.

Some key issues to emerge from these reports:

- The level of participation is low, and in fact is shown to be decreasing rather than improving.
- Of concern is the fact that those most at risk are least likely to participate. Men are less likely to participate than women, despite the fact that they are at higher risk for bowel cancer. There is also an apparent lack of uptake of screening in more disadvantaged populations, although this may also be due to the fact that the less well off do undertake initial screening but then have difficulty in accessing follow-up, particularly colonoscopy. A South Australian study reinforces this concern about access to the NBCSP and indicates that in large part this is due to flaws in the program design.<sup>25</sup> It found lower NBCSP participation

<sup>25</sup> Ward PR, Javanparast S, Ah Matt M, et al. (2011) Equity of colorectal screening: cross-sectional analysis of National Bowel Cancer Screening Program data for South Australia. *Aus NZ J Pub Health* 35(1):61-65. Accessed at <http://onlinelibrary.wiley.com/doi/10.1111/j.1753-6405.2010.00637.x/full>

rates for men compared to women, socioeconomically disadvantaged groups compared to more affluent groups, and people from metropolitan and remote areas compared to those from rural areas. Those who reported speaking a language other than English at home and those who reported an Indigenous background were also under-represented.

- Less than half of those with a positive FOBT see their GP for follow-up. Given that there are more colonoscopies than GP visits, there is likely some under-reporting in this area.
- More than 50 percent (51-62.8%) of those with a positive FOBT eventually get a colonoscopy. There is some evidence of a significant delay in when this occurs. It is not known whether this is an appropriate percentage of participants to have this test, or whether having a colonoscopy is determined more on ability to pay and access than need.
- There are significant deficiencies in the ability to track what the outcomes are from colonoscopy and from pathology on samples taken. It seems that many patients are lost to follow-up. Yet it is critical for the success of the program that all patients identified as having possible indications for bowel cancer are followed through to resolution, and the results are recorded. Failure to do this means that the success and the cost-effectiveness of the program can never be factually established.

A different look at the initial impact of the NBCSP was provided in a paper published by Ananda et al in 2009, using data from a standard dataset developed by the Colorectal Surgical Society of Australia and New Zealand and BioGrid Australia.<sup>26</sup> This provided information from surgeons at 19 participating sites on bowel cancer cases diagnosed between May 2006 and June 2008. They identified 1628 cases of bowel cancer; of these, information on the patients' FOBT status as part of the NBCSP was available for 1,268.

Of the 1268 patients, 82 (6.5 percent) had bowel cancer detected by FOBT, and 1186 (93.5 percent) had symptomatic presentations. Forty of the 82 FOBT-detected cancers were recorded as being screened through the NBCSP. Overall 3.2 percent of bowel cancer cases were diagnosed through this program, despite screening invitations only being offered to people aged 55 or 65 years. The most significant finding is the earlier stage at diagnosis in NBCSP-detected cases compared with symptomatic cancer, indicating a likely significant impact on survival for patients undergoing screening.

The NBCSP is not reaching many Indigenous Australians in the target group, with factors contributing to sub-optimal participation including how participants are selected, the way the screening kit is distributed, the nature of the test and comprehensiveness of its contents, cultural perceptions of cancer and prevailing low levels of knowledge and awareness of bowel cancer and the importance of screening.<sup>27</sup>

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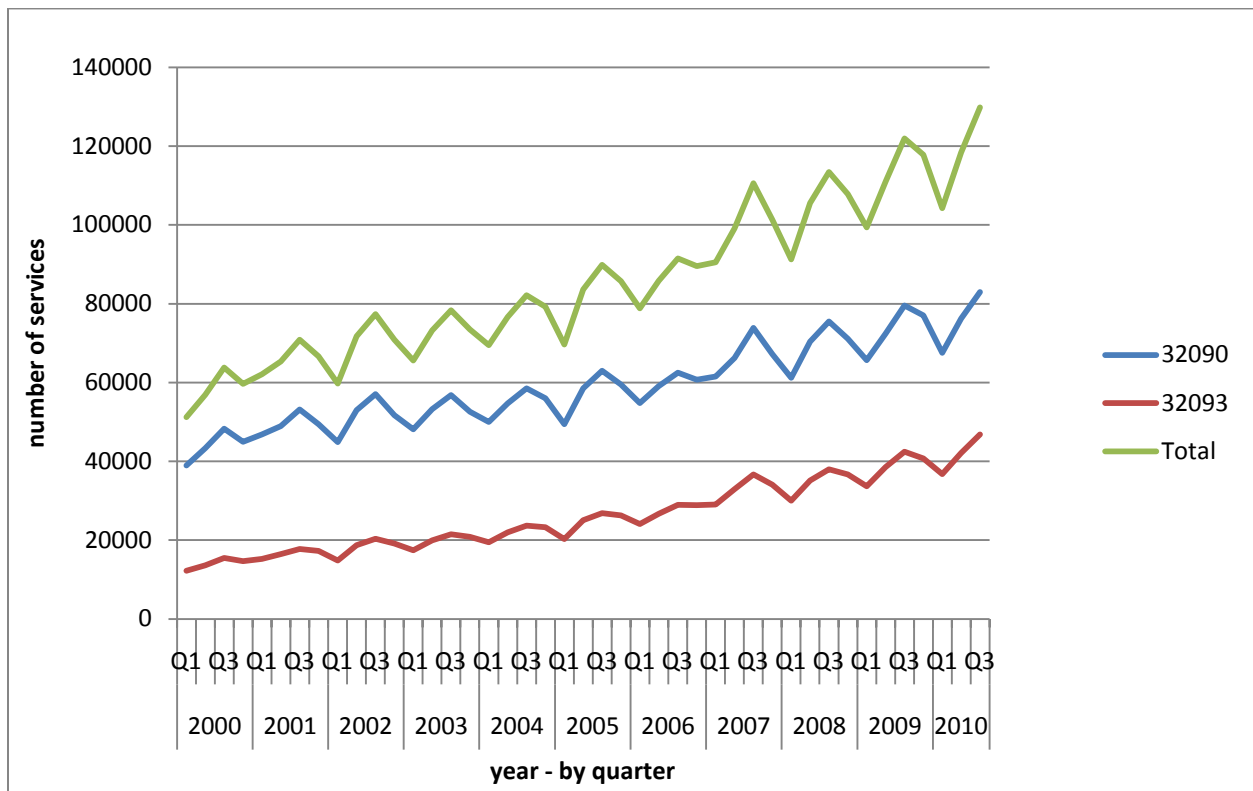
<sup>26</sup> Ananda S, McLaughlin SJ, Chen F et al. (2009) Initial impact of Australia's National Bowel Cancer Screening Program. *MJA* 191(7):378-381. Accessed at [http://www.mja.com.au/public/issues/191\\_07\\_051009/ana10488\\_fm.html](http://www.mja.com.au/public/issues/191_07_051009/ana10488_fm.html)

<sup>27</sup> Christou A, Katzenellenbogen JM & Thompson SC. (2010) Australia's National Bowel Cancer Screening Program: does it work for Indigenous Australians? *BMC Public Health* 10: 373. Accessed at <http://www.biomedcentral.com/1471-2458/10/373>

## Colonoscopies

The NBCSP initially offered FOBT to Australians turning 55 or 65 years of age. In 2005, there were 423,510 Australians who turned 55 or 65 years of age. With a 41 percent participation rate and a 7 percent FOBT positivity rate, this means around 12,000 colonoscopies were needed per year in the first years. This number expanded to around 15,000 annually when people turning 50 were added (this younger population has lower participation rates and is at lower risk for bowel cancer).

**Figure 1: Medicare-funded colonoscopies, 2000-2010.**



Data from Medicare Australia.

MBS item 32090: Fibreoptic colonoscopy, with or without biopsy. Fee: \$321.65 Benefit 75% = \$241.25 85% = \$273.45

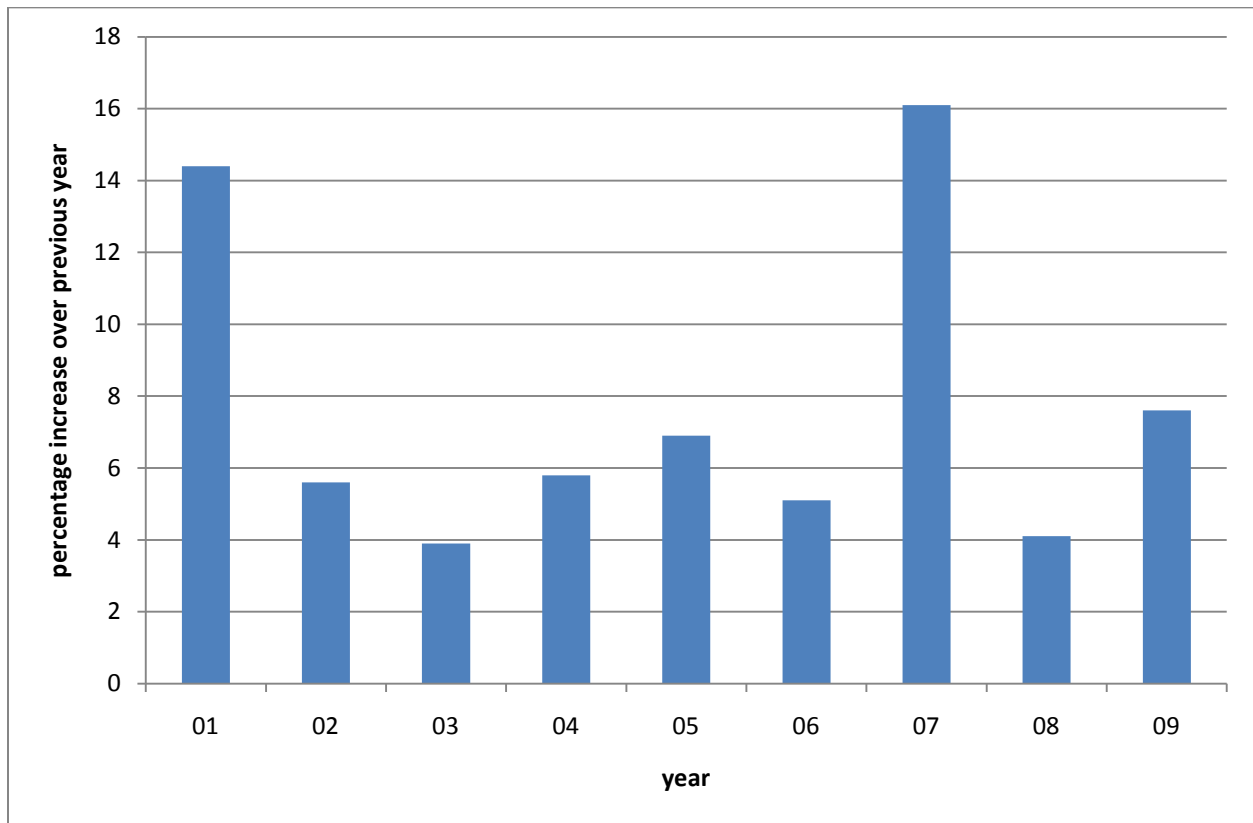
MBS item 32093: Endoscopic examination of the colon beyond the hepatic flexure by fibreoptic colonoscopy for the removal of one or more polyps. Fee: \$451.40 Benefit: 75% = \$338.55 85% = \$383.70

Medicare Benefits Schedule data for colonoscopies obtained from the Medicare Australia website shows a steady increase in the number of procedures performed since 2000 (see Figure 1). A majority of these are delivered to people aged 45-64 years. The cost to MBS in 2010 was \$133.2 million, up from \$120.3 million in 2009 and \$49.7 million in 2000. These figures do not include the cost of anaesthesia or pathology, and the MBS data do not reflect those

colonoscopies done in the public sector. One early estimate was that this could be as high as 30-50 percent.<sup>28</sup>

Although there is considerable variability in the rate of increase over this time frame, with the exception of a bounce in 2007, there is little to show that a new program requiring 12,000 + colonoscopies a year has been introduced (see Figure 2). There is some evidence from the data in Table 2 that a significant number of colonoscopies were performed between July 2007 and June 2008, so this larger than average increase in 2007 may reflect that.

**Figure 2: Annual rate of increase of Medicare-funded colonoscopies, 2000-2009.**



Data from Medicare Australia.

The Cancer Council of Australia also finds that the NBCSP is unlikely to be the cause of the rapid rate of increase in colonoscopies and cites an observation from a draft review recently released by the Department of Health and Ageing to support this finding.<sup>29</sup>

<sup>28</sup> Macrae FA. (2007) Providing colonoscopy services for the National Bowel Cancer Screening Program. MJA 186 (6): 280-281. Accessed at [http://www.mja.com.au/public/issues/186\\_06\\_190307/mac11373\\_fm.html](http://www.mja.com.au/public/issues/186_06_190307/mac11373_fm.html)

It does seem highly likely that in many cases colonoscopy is being used as a screening tool and / or diagnostic tool outside of the NBCSP. The inappropriate use of colonoscopies drains both capacity and health budgets.

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<sup>29</sup> Cancer Council Australia pre-budget submission, 2011-12. Accessed at [http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer\\_Council\\_Australia\\_prebudget\\_submission\\_2011\\_12.pdf](http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer_Council_Australia_prebudget_submission_2011_12.pdf)

## **Giving Australians the bowel cancer screening program they deserve**

In its 2011-12 pre-budget submission, Cancer Council Australia took the unusual step of focusing its report entirely on the expansion of the NBCSP.<sup>30</sup> The Cancer Council advocates full implementation of a program of biennial screening of individuals aged 50 and over, using FOBT. It recommends achieving this in four years, with the interim measure of continuing the current regime of screening and including 60 and 70 years olds from July 2011.

We strongly endorse this position. Not acting now to substantially, comprehensively and sustainably build on the work that has been done to date would be a costly failure of public health policy. Moreover, the costs of expanding the program as recommended are small compared to the potential savings in health care costs.

Australians deserve this important preventive health program.

### **Bowel cancer screening programs in other countries**

The National Health and Medical Research Council Guidelines recommend biennial screening from the age of 50 years.<sup>31</sup> Although it is acknowledged that biennial screening, using FOBT, from the age of 50 years is an acceptable and cost-effective screening program for Australia, there is no single approach to doing this. This is evidenced by the varied screening programs and guidelines that can be found in other developed countries. The common theme however is that screening, repeated at regular intervals, is recommended to reduce the number of bowel cancer deaths.

The United States does not have a bowel cancer screening program, but it is a requirement of the Affordable Care Act, the new health care reform law, that private and public health insurers include all preventive health services given an A or B recommendation by the U.S. Preventive Services Task Force (USPSTF), with no copayments or deductibles.<sup>32</sup> The USPSTF gives an A recommendation to screening for bowel cancer using faecal occult blood testing, sigmoidoscopy, or colonoscopy, in adults, beginning at age 50 years and continuing until age 75 years.<sup>33</sup>

Similarly, Canada does not have a national bowel cancer screening program. However individual provinces have acknowledged the need for such programs and have made varying degrees of progress in developing and implementing these. To help support screening programs across the country, the National Colorectal Cancer Screening Network was established and ten

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<sup>30</sup> Cancer Council Australia pre-budget submission, 2011-12. Accessed at [http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer\\_Council\\_Australia\\_prebudget\\_submission\\_2011\\_12.pdf](http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer_Council_Australia_prebudget_submission_2011_12.pdf)

<sup>31</sup> Medicare Australia. National Bowel Cancer Screening Program – Information for health professionals. Accessed at <http://www.medicareaustralia.gov.au/provider/patients/nbcsp/index.jsp>

<sup>32</sup> Preventive care and services. Healthcare.gov Accessed at <http://www.healthcare.gov/law/provisions/preventive/index.html>

<sup>33</sup> U.S. Preventive Services Task Force (2008) Screening for Colorectal Cancer. Accessed at <http://www.uspreventiveservicestaskforce.org/uspstf/uspcolo.htm>

provinces have committed to developing organized screening programs.<sup>34</sup> The Canadian Task Force on Preventive Health Care gives an A recommendation to an annual or biennial faecal occult blood testing and a B recommendation to flexible sigmoidoscopy.<sup>35</sup>

After two rounds of pilots, the United Kingdom commenced rolling out its NHS Bowel Cancer Screening Programme in 2006, completing this in 2010.<sup>36</sup> The program differs in Scotland but in England, Wales and Northern Ireland, guaiac FOBT is offered biennially to those aged 60 to 69.<sup>37</sup> People over 70 can request a screening kit, however an extension of the invitation age to 74 is being implemented in England from April 2010. In Wales, the intent is to extend the program to those aged 50 to 74 by 2015 and in Scotland this is already the case. The estimated annual cost of the program in England is £76.2 million<sup>38</sup> and the first pilot estimated that the cost per quality adjusted life year gained (starting at age 60) is around £6,000 to £8,000.<sup>39</sup>

Other countries have made varying degrees of progress with relation to formalized bowel cancer screening programs. As of 2008, countries including Denmark, Finland, the Netherlands, Spain, Switzerland and Hungary, had conducted program pilots or initial rounds of screening which differed in participant numbers and geographical span.<sup>40</sup> France, Germany, Japan and South Korea all have national programs of some description.<sup>41</sup>

### Elements of an evidence-based screening system

Given the multitude of approaches to bowel cancer screening around the world, Australia needs to think carefully about what is the most appropriate and acceptable program for its citizens. There are many factors to be considered and although the list below is not exhaustive, we mention those points we see as critical to an effective, long-term bowel cancer screening program suitable for Australians.

- Screening must be performed at regular intervals, ideally biennially. A negative once-off screen provides no indication as to whether an individual will develop bowel cancer in the

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<sup>34</sup> Canadian Partnership Against Cancer. Colorectal Screening Initiative. Accessed at <http://www.partnershipagainstcancer.ca/priorities/screening/strategic-initiatives/colorectal-screening-initiative/>

<sup>35</sup> Canadian Task Force on Preventive Health Care. (2001) Colorectal Cancer Screening. Accessed at [http://www.canadiantaskforce.ca/recommendations/2001\\_03\\_eng.html](http://www.canadiantaskforce.ca/recommendations/2001_03_eng.html)

<sup>36</sup> NHS National Bowel Cancer Screening Programme. Accessed at <http://www.cancerscreening.nhs.uk/bowel/index.html>

<sup>37</sup> CancerHelp UK. About bowel cancer screening. Accessed at <http://www.cancerhelp.org.uk/type/bowel-cancer/about/screening/about-bowel-cancer-screening>

<sup>38</sup> National Audit Office (2010). Delivering the Cancer Reform Strategy. Technical Appendix. Accessed at [http://www.nao.org.uk/publications/1011/cancer\\_reform\\_strategy.aspx](http://www.nao.org.uk/publications/1011/cancer_reform_strategy.aspx)

<sup>39</sup> Evaluation of the UK Colorectal Cancer Screening Pilot. Final report. May 2003. Accessed at <http://www.cancerscreening.nhs.uk/bowel/finalreport.pdf>

<sup>40</sup> International Screening Network: Inventory of Colorectal Cancer Screening Activities in ICSN Countries. National Cancer Institute (2008). Accessed at <http://appliedresearch.cancer.gov/icsn/colorectal/screening.html>

<sup>41</sup> Ibid

next few years and indeed may provide false assurances that they will not. A negative once-off screen is a waste of time, money and, more importantly, life. What is needed is a fully-funded, long-term commitment to the program that is not subject to the vagaries of the budget process and politics. This was achieved with breast and cervical cancer screening and is achievable with bowel cancer screening too.

- Participation rates need to be improved. Screening rates are often reported as low – too low to be effective; a national survey in the United States found that only 23.5 percent of people over 50 years took up an offer of FOBT screening,<sup>42</sup> and in Germany, the national uptake of FOBT screening is 20 percent for men and 30 percent for women.<sup>43</sup> However, Finland has seen rates as high as 71 percent in initial rounds of its program.<sup>44</sup> To be effective, Australia must improve its current participation rate from 40 percent. There may be many reasons for such a discrepancy: geographical distances; low uptake in Indigenous communities and non-native language speaker populations; lack of public awareness; level of acceptability of FOBT; and general attitudes to health - to postulate just a few. Accordingly, Australia would do well to consider public awareness and educational programs, targeted and culturally sensitive where necessary, to reach all groups.
- Healthcare providers form an integral part of any screening program. GPs are in a prime position to advocate bowel cancer screening, encourage participation and ensure follow-up. GP, practice nurse, and specialist awareness and engagement are essential and can be promoted through education programs specifically designed to achieve this.
- All patients must be followed up appropriately. Mechanisms for following up those who receive an FOBT test and don't use it, those who have a positive FOBT and do not see a doctor, and those who have a positive FOBT and do not have a colonoscopy need to be in place.
- There needs to be the capacity to deal with FOBT results, particularly for those who have a positive result and require a colonoscopy. Colonoscopies should be able to be accessed by all who need them, not just those who can afford to pay. This may mean that specific arrangements will have to be made for people who live in rural and remote areas.
- The monitoring system for the screening program needs to provide the necessary details at a state-based level (and lower levels of aggregation such as postcodes) to inform service planning. The current national monitoring system does not highlight the specific geographical areas that might benefit from renewed attempts at targeted interventions designed to improve the equity of participation.<sup>45</sup>

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<sup>42</sup> Centers for Disease Control and Prevention (CDC). (2003). Colorectal cancer test use among persons aged > or = 50 years--United States, 2001. *Morb Mortal Wkly Rep.* 14;52(10):193-6. Accessed at <http://www.ncbi.nlm.nih.gov/pubmed/12653456?dopt=Abstract>

<sup>43</sup> Baker PG (2004). Screening for colorectal cancer — benefit or burden? *J R Coll Physicians Edinb* 34: 99-103. Accessed at [http://www.rcpe.ac.uk/journal/issue/journal\\_34\\_2/Screening\\_Colorectal\\_Cancer.pdf](http://www.rcpe.ac.uk/journal/issue/journal_34_2/Screening_Colorectal_Cancer.pdf)

<sup>44</sup> National Cancer Institute (2008). International Screening Network: Inventory of Colorectal Cancer Screening Activities in ICSN Countries. Accessed at <http://appliedresearch.cancer.gov/icsn/colorectal/screening.html>

<sup>45</sup> Ward PR, Javanparast S, Ah Matt M, et al. (2011) Equity of colorectal screening: cross-sectional analysis of National Bowel Cancer Screening Program data for South Australia. *Aus NZ J Pub Health* 35(1):61-65. Accessed at <http://onlinelibrary.wiley.com/doi/10.1111/j.1753-6405.2010.00637.x/full>

- Evaluation of the screening program is key to ensuring ongoing optimisation. A data base that contains sufficient granularity to be useful needs to be established and maintained, with regular evaluations of the data collected and modification of the program on the basis of results. Ideally the collection, evaluation and modification processes would all be open to public scrutiny.
- The screening program, once established, needs to be updated as required on the basis of new evidence and expert consensus.

### Estimates of cost

Cost is a critical issue when addressing any public health initiative. Currently only 3% of annual bowel cancer expenditure goes towards screening.<sup>46</sup> The interim measure of continuing the current regime of screening and including 60 and 70 years olds from July 2011 that the Cancer Council recommends would cost \$45 million per annum over the next two years; \$30 million to retain testing of people turning 50, 55 and 65 and \$15 million to add 60 and 70-year-olds.<sup>47</sup>

The Cancer Council estimates that full program implementation could be achieved for around \$135 million per annum at the outset, with offsets in reduced treatment costs and unnecessary colonoscopy accruing over time.<sup>48</sup> In line with this, recent modeling estimates full implementation of biennial screening for people aged 50–74 years would have gross costs of \$150 million.<sup>49</sup> Meanwhile, the additional expenditure required, after accounting for reductions in bowel cancer incidence, savings in treatment costs, and existing ad-hoc colonoscopy use, is likely to be less than \$50 million annually.<sup>50</sup> The largest single component of a screening program is the cost of diagnostic and surveillance colonoscopies, at \$97.5 million.

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<sup>46</sup> Cancer Council Australia pre-budget submission, 2011-12. Accessed at [http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer\\_Council\\_Australia\\_prebudget\\_submission\\_2011\\_12.pdf](http://www.cancer.org.au/File/PolicyPublications/Submissions/Cancer_Council_Australia_prebudget_submission_2011_12.pdf)

<sup>47</sup> Ibid

<sup>48</sup> Cancer Council Australia. National Bowel Cancer Screening Program. Accessed at <http://www.cancer.org.au/policy/electionpriorities2010/bowelcancerscreening.htm>

<sup>49</sup> Pignone MP, Flitcroft KL, Howard K et al. (2011) Costs and cost-effectiveness of full implementation of a biennial faecal occult blood test screening program for bowel cancer in Australia. MJA 194 (4): 180-185. Accessed at [http://www.mja.com.au/public/issues/194\\_04\\_210211/pig10935\\_fm.html](http://www.mja.com.au/public/issues/194_04_210211/pig10935_fm.html)

<sup>50</sup> Ibid