



MAKING PREMATURE DEATH FROM BOWEL CANCER A THING OF THE PAST

THE BEAT BOWEL CANCER PROJECT (BBCP)

South Australian
Academic Health Science
and Translation Centre

About 17,000 Australians are diagnosed with colorectal (bowel) cancer each year. Most patients (about two thirds) have curable disease. Yet, bowel cancer remains the second leading cause of cancer death in Australia and accounted for the highest expenditure on the Australian health system in 2008-2009.

The introduction of the National Bowel Cancer Screening Participation (NBCSP) in 2006 aims to reduce the morbidity and mortality from bowel cancer. When fully implemented in 2020, the NBCSP will actively recruit and screen the eligible target population (aged 50 to 74 years) for early detection or prevention of the disease. However, participation in the NBCSP remains low (~40%) and has yet to reach the desired screening participation rate to achieve maximum benefit from the program.

Modelled analysis of health and resource impact of NBCSP

On behalf of the BBCP, The Cancer Council NSW (CCNSW) used the *Policy1-Bowel* microsimulation platform to analyse the health, cost and resource impacts of increasing participation and diagnostic (colonoscopy) follow-up in the NBCSP.

Policy1-Bowel platform

The *Policy1-Bowel* microsimulation platform was developed at CCNSW and previously used for several analyses related to the NBCSP, including analyses to support the *Clinical practice guidelines for the prevention, early detection and management of colorectal cancer (2017)*. *Policy1-Bowel* models in detail the NBCSP rollout period from 2006-2020. See the full report for more information on the assumptions and methods.

Participation Scenarios

Participation scenarios were modelled to determine the potential impact of the NBCSP on health, cost and resource utilisation outcomes if bowel screening participation (iFOBT) and compliance to follow-up (colonoscopy) after a positive bowel screen result were increased (from 2016 onwards).

RELEVANT PUBLICATIONS

Lew JB, St John DJ, Xu XM, Greuter MJE, Caruana M, Cenin DR, He E, Saville M, Grogan P, Coupé VMH, Canfell K. Long-term evaluation of benefits, harms, and cost-effectiveness of the National Bowel Cancer Screening Program in Australia: a modelling study. *Lancet Public Health* 2017 Jun 26; e331-e340.

ABOUT THE BBCP

This project is a collaboration between the Beat Bowel Cancer Project (BBCP) and the Cancer Council NSW (CCNSW) Research Division. The BBCP is a South Australian initiative that aims to reduce premature death from bowel cancer. The BBCP thank Professor Karen Canfell and her team for the modelling and analysis undertaken in this project.



FACTS ABOUT NBCSP PARTICIPATION

39%*

In terms of absolute mortality, the current NBCSP participation rate (39%) does not realize the full benefits of early detection of bowel cancer.

60%

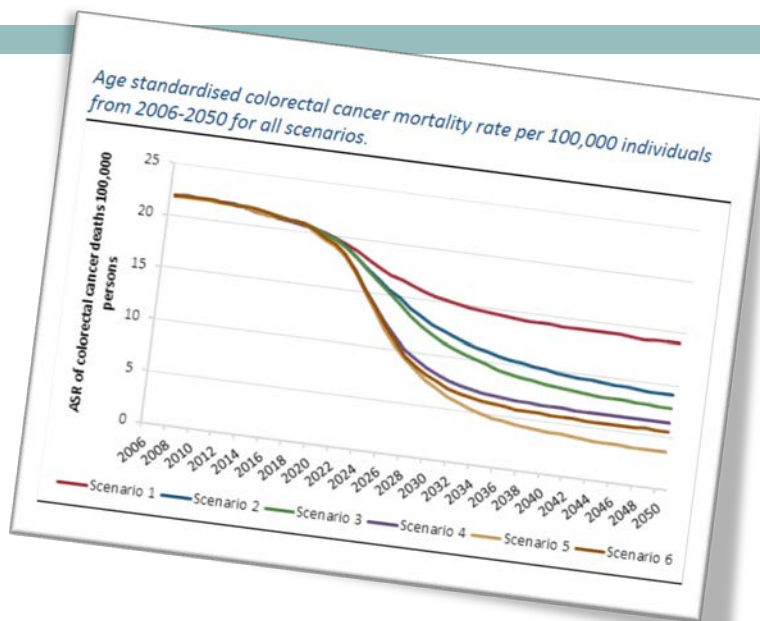
Increasing bowel screening to 60% and improving colonoscopy follow-up to 90% is expected to prevent >50,000 additional cases of colorectal cancer (in ages 0-89 years) from 2015 to 2040.

*, AIHW. *National Bowel Cancer Screening Program Monitoring Report (2017)*.



Overall BBCP recommendation

A realistic target of 60% bowel screening participation and 90% follow-up colonoscopy by 2020 almost halves the current age-standardised colorectal cancer mortality rate and from 2030-2040 is predicted to save the health system about \$450 million.



Participation Scenarios

Scenarios were compared to currently observed levels of iFOBT screening participation (~40%) and colonoscopy follow-up compliance (~70%) for the eligible population (50-74 years) (**Scenario 1**). (See Table).

SCENARIO	iFOBT (by 2020)	FOLLOW-UP (by 2020)
1 (current)	40%	70%
2	60%	70%
3	60%	90%
4	90%	90%
5	90% plus colonoscopy at 40 and 60 years	90%
6 (45-74yrs)	90%	90%

Key findings

- ❖ An increasing number of iFOBTs and colonoscopies is observed as participation assumptions rise.
- ❖ Increasing NBCSP participation reduced the number of new cases of colorectal cancer and colorectal cancer deaths.
- ❖ **Scenario 5** predicts the highest number of additional cases of colorectal cancer (>140,000) and deaths (64,900) prevented (in 0-89 years, 2015-2040) compared to current participation (i.e. Scenario 1) but unlike the other scenarios, does not become cost-saving at any modelled time due to the significant demand for additional high-cost colonoscopies.

- ❖ **Scenario 6** predicts a small improvement in health outcomes when screening age range is extended to 45-74 years, when compared with an equivalent screening scenario that assumed screening at 50-74 years, but cost-saving in annual expenditure compared to current participation (i.e. Scenario 1) is 7x higher in Scenario 4 (i.e. the comparative scenario) than in Scenario 6.
- ❖ Except for Scenario 5, all scenarios were predicted as cost-saving in annual expenditure after 2028-2032 (exact timing varied among scenarios) compared to no screening, after an initial cost increase in 2006-2029.
- ❖ **Scenario 4** predicts the highest increase in resources (i.e. highest number of positive iFOBT results and the demand for colonoscopies), highest improvement in health outcomes (i.e. highest number of incident colorectal cancer cases and colorectal cancer deaths prevented), and the highest amount of cost saved per year in the period 2030-2040, when scenarios 2-4 are compared with Scenario 1.

What this means

Comparing Scenario 5 with Scenario 4: adding additional colonoscopy screenings at 40 and 60 years could prevent more colorectal cancers and colorectal cancer deaths, but would significantly increase the colonoscopy demand and cost at the same time.

Comparing Scenario 6 with Scenario 4: widening screening age range to 45-74 years from the currently recommended 50-74 years would increase the colonoscopy demand and cost with only a relatively small improvement in health outcomes.

Scenario 4 represents an aspirational target to maximise the benefits of the NBCSP. However, Scenario 3 is potentially realisable with existing health services, referral pathways and workforce and reflects participation rates that are similar to other population-based screening programs.

FULL REPORT

Worthington J, Feletto E, Lew J-B, Canfell K. Modelled analysis of the health and resources impacts of increasing participation and follow-up in the NBCSP: Cancer Council NSW Cancer Research Division, 2017: Sydney, NSW.

FOR MORE INFORMATION

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