Early success for Australia's bowel screening program: let's move it along

Earlier stage at diagnosis shows promise for saving lives

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Cancer screening programs are under scrutiny. Ultimately, the measure of success is whether the program saves lives by detecting precancerous lesions or early-stage cancers that have a high cure rate.

This must be achieved by a test that can feasibly be offered to whole populations, is acceptable to large population cohorts and reduces mortality with minimal harm. Harm in this context refers to overdiagnosis — detecting cancers or suspected cancers that would have caused no significant morbidity in the patient's lifetime. This differs from an incorrect diagnosis, but needs to be considered when weighing the risks and benefits of every screening program. A common harm of overdiagnosis is that it can lead to patients having invasive treatment, often with side effects, for no survival benefit (overtreatment). Psychological distress is also a significant harm of overdiagnosis.

The balance of risks and benefits is at the core of why prostate-specific antigen testing is not recommended as a population screening test for prostate cancer.[1]

The benefits of breast screening have also been questioned, partly because advances in treatment have coincided with population-based mammographic screening — making the relative contributions of each to improved survival difficult to measure. However, breast screening is still recommended when benefit is balanced against risk.[2]

The most recent Australian population screening program is for bowel cancer, using faecal immunochemical test (FIT) kits. The federal government introduced the National Bowel Cancer Screening Program (NBCSP) in 2006 after successful pilot studies were conducted from 1999 in Mackay, Queensland, and selected suburbs in Melbourne and Adelaide.[3] Initially kits were sent to people turning 55 and 65, with 50-year-olds added in the 2008–09 Commonwealth Budget. In 2012 plans were announced to extend the program by adding 60-year-olds in 2013 and 70-year-olds in 2015, and then progressively filling in the gaps with the remaining age groups, with completion expected in the early 2030s. Screening would then be available every 2 years, as recommended, for people aged 50–74 years.[4]

Accurately measuring the population benefit of bowel screening using mortality as the end point could take many years. However, it is known from previous randomised studies that stage at diagnosis is linked to survival.[5] In this issue, Cole and colleagues report on a cohort of patients with colorectal cancer recorded on the South Australian Cancer Registry, and compare stage at diagnosis in patients invited to the NBCSP, including those who participated in testing and those who had positive results, with all other eligible patients in the cohort.[6]

Those who were invited to participate in the screening program were more likely to be diagnosed at the earliest stage compared with those who were not invited (stage A, 34.8% versus 19.2%; $P<0.001$), and half as likely to be diagnosed at the most advanced stage (stage D, 5.4% versus 12.4%; $P<0.001$), within 1 year of being invited to the NBCSP. This downstaging due to early detection will likely result in improved survival.

This latest result reflects a previous report where, of 1628 patients with bowel cancer diagnosed between May 2006 and June 2008, those diagnosed through the NBCSP (40%) had almost triple the rate of stage A disease compared with patients who were not diagnosed until they developed symptoms (14%).[7] Moreover, in a cost-effectiveness analysis, a conservative estimate placed on the number of lives saved by a fully implemented bowel screening program was 500 per year.[8] It is estimated that the reduction in mortality from bowel cancer in the target population of 50 years and over is between 30% and 40% (assuming the FIT has 85% sensitivity for detecting cancers and 60% in advanced adenomas, and a 60% participation rate).[4]

In terms of balancing benefits with harms such as overdiagnosis, the FIT itself has no side effects apart from the psychological distress of receiving a positive result. However, patients who have positive results in the FIT are recommended to have a follow-up colonoscopy. The advantage of doing a FIT first is that the likelihood of finding a bowel cancer is 12 to 40 times greater if the FIT result is positive.[5] Colonoscopy has a morbidity rate of 0.4% and a mortality rate of 0.004% in outpatients at an Australian hospital.[9] Around 5% of people with a positive FIT result are diagnosed with bowel cancer, while polyps are found in 40%–45%. The others have non-malignant conditions such as haemorrhoids.[5]

Given that the NBCSP is a new program and the first population screening program recommended for men, and that to date it has been only partially implemented, it is of little surprise that the participation rate is low (around 40%).[10] This means that the program is nowhere near realising its full benefit.

The early positive results should provide encouragement to the government to accelerate the implementation of the NBCSP and actively promote it to eligible population groups to boost interim participation.

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Research p 327

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