

# Bowel cancer screening

By Dr Lennart Choo, Prof Ian Norton

Bowel cancer (colorectal cancer) is a disease of the large bowel (colon) or rectum. It is the second leading cause of cancer-related death in Australia. In 2006, there were more than 13,500 new diagnoses of bowel cancer and more than 3,800 deaths associated with the disease.<sup>1</sup> Screening to decrease the incidence of bowel cancer is possible as there is an identifiable precursor lesion in the form of an adenomatous polyp which is easily amenable to local therapy.

Additionally, identification of early cancers has an important impact on prognosis (five-year survival is 90% if the disease is diagnosed while still localised, 68% if the disease has spread to local lymph nodes, and 10% if distant metastases are present<sup>2</sup>). Forty per cent (40%) reductions in bowel cancer mortality resulting from those who actually performed the test has been reported.<sup>3</sup>

## Risk for bowel cancer

Three risk categories have been identified to stratify patients into appropriate screening programs; high, increased and average risk. Only 25% of new cases of bowel cancer occur in those with easily identifiable risk factors. The remaining 75% occur in patients considered at average risk.

## Average risk

Average risk individuals are those older than 50 years old, without a personal or family history of bowel cancer or colonic adenomatous polyps, or a personal history of longstanding IBD. The average risk patients are those that should be targeted for screening by pharmacists.

Individuals without a personal or family history of bowel cancer or polyps and no IBD have an increasing risk of bowel cancer with increasing age (Table 1). Population screening is recommended from the age of 50 years in completely asymptomatic individuals.<sup>3,4</sup>

## Increased risk

Those with increased risk include individuals with a personal or family history of colon adenomatous polyps, cancer, or a personal history of longstanding idiopathic inflammatory bowel disease (IBD; either Crohn's disease or ulcerative colitis).

## High risk

Individuals with a high risk of bowel cancer have up to a 100% chance of developing bowel cancer in their lifetime, and this group includes those with hereditary risk factors for bowel cancer, such as familial adenomatous polyposis (FAP) and hereditary nonpolyposis bowel cancer (HNPCC).

Patients with a high or increased risk of bowel cancer require referral to a gastroenterologist for colonoscopic surveillance or screening. The interval of colonoscopic surveillance will vary with the level of risk. Symptomatic patients (for example, rectal bleeding, severe constipation, abdominal pain, weight loss and lethargy) need to be evaluated by their doctor, and individually assessed for further investigation.

**Table 1. Absolute risk of colorectal cancer in people without risk factors<sup>1</sup>**

Age (years)	Risk of colorectal cancer within a time period			
	5 years	10 years	15 years	20 years
30	1 in 7000	1 in 2000	1 in 700	1 in 350
40	1 in 1200	1 in 400	1 in 200	1 in 90
50	1 in 300	1 in 100	1 in 50	1 in 30
60	1 in 100	1 in 50	1 in 30	1 in 20
70	1 in 65	1 in 30	1 in 20	1 in 15
80	1 in 50	1 in 25	—	—

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## Faecal occult blood test (FOBT)

Current NHMRC and GESA (Gastroenterological Society of Australia) guidelines advocate FOBT as the screening tool of choice for those at average risk of bowel cancer.<sup>3,5</sup> Patients with positive test results are further investigated with a colonoscopy. The premise of FOBT is that advanced polyps and bowel cancer may bleed intermittently, which will result in a positive FOBT result prior to symptomatic presentation (at a more advanced stage). The newer immunochemical FOBTs have usurped the role of guaiac based FOBTs, and should now be the FOBT of choice for bowel cancer screening purposes.

### a) Guaiac based Faecal Occult Blood Test (gFOBT)

gFOBTs detect blood in the stool based on a reaction with the pseudoperoxidase activity of heme. The test is not specific for human haemoglobin and can cross react with peroxidases in fruits, vegetables and non-human blood. Therefore, a strict three day elimination diet of all meats and some raw vegetables is required before testing. Nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin and vitamin C should also be avoided prior to testing to minimise false positive and negative results respectively.<sup>6</sup>

gFOBTs require collection of a sample of stool over three consecutive days, and does not distinguish upper from lower gastrointestinal bleeding. Despite these limitations, in a systemic review of four randomised, controlled trials involving more than 320,000 individuals, a 16% reduction in the relative risk of bowel cancer death was noted overall, and a 25% reduction was seen when adjusted for screening attendance.<sup>7</sup>

### b) Immunochemical Faecal Occult Blood Test (iFOBT)

The newer technology iFOBT (also known as Faecal Immunochemical Test – FIT) specifically detects non-degraded human globin and thus identifies bleeding in the bowel and rectum only (blood from the upper gastrointestinal tract is degraded to heme products prior to its transit to the bowel).

It does not require dietary and medication restrictions pre-testing. This has translated to increased participation and detection rates in population screening studies ( $p < 0.05$ ).<sup>8</sup> Two other large randomised controlled trials have recently shown the superiority of iFOBT over gFOBT, detecting advanced neoplasms and cancer at a rate of 2–2.5 times more when used as a screening tool.<sup>9,10</sup> An example of a widely available iFOBT kit is *InSure*, recently renamed *Bowel Screen Australia*.

## Government's National Bowel Cancer Screening Program (NBCSP)

Australia is fortunate to have one of the few population-based bowel cancer screening programs in the world. Since its launch in May 2006, it has had a measurable impact on the stage of bowel cancer found at diagnosis, with 40% of asymptomatic cancers detected in the NBCSP being stage I compared with 14% of symptomatic cancers.<sup>10</sup> Improvement in survival is anticipated.

The NBCSP currently offers free iFOBT test kits for only Australians turning 50, 55 or 65. No age groups in between are included and no rescreening is available at this stage. Over 1.6 million people have been invited to participate, but participation rates of only 36–39% have been reported.<sup>11</sup> Despite this, over 1,000 people were diagnosed with bowel cancer, and over 11,000 people have had polyps removed, potentially preventing cancers.<sup>6</sup> Depicted in Figure 1 is the suggested bowel cancer screening pathway advocated by Bowel Cancer Australia.

## What to offer for Australians ineligible on the NBCSP?

*BowelScreen Australia* is a pharmacy-based bowel cancer awareness, education and screening program for the Australian community using a clinically proven, sensitive and reliable immunochemical faecal occult blood test. *BowelScreen Australia* is a collaboration between Bowel Cancer Australia and the Pharmacy Guild of Australia.

Annual bowel cancer screening is recommended for both men and women:

- aged 50 and over
- with no symptoms
- with no personal or family history of bowel cancer or polyps.

The aim of screening is to find any polyps or to find cancer early when it is easier to treat and cure. People experiencing symptoms or who have a personal/family history of bowel cancer or polyps are advised to discuss appropriate screening for the disease with their GP. For more information visit: [www.bowelscreenaustralia.org](http://www.bowelscreenaustralia.org)

## Conclusion

There is compelling evidence to support screening to decrease the morbidity and mortality from bowel cancer, the second leading cause of cancer-related death in Australia. Although those at high or intermediate risk of bowel cancer are more likely to develop the disease, and thus warrant more intensive and invasive screening, the burden of the disease is in the group at average risk of bowel cancer who are completely asymptomatic.

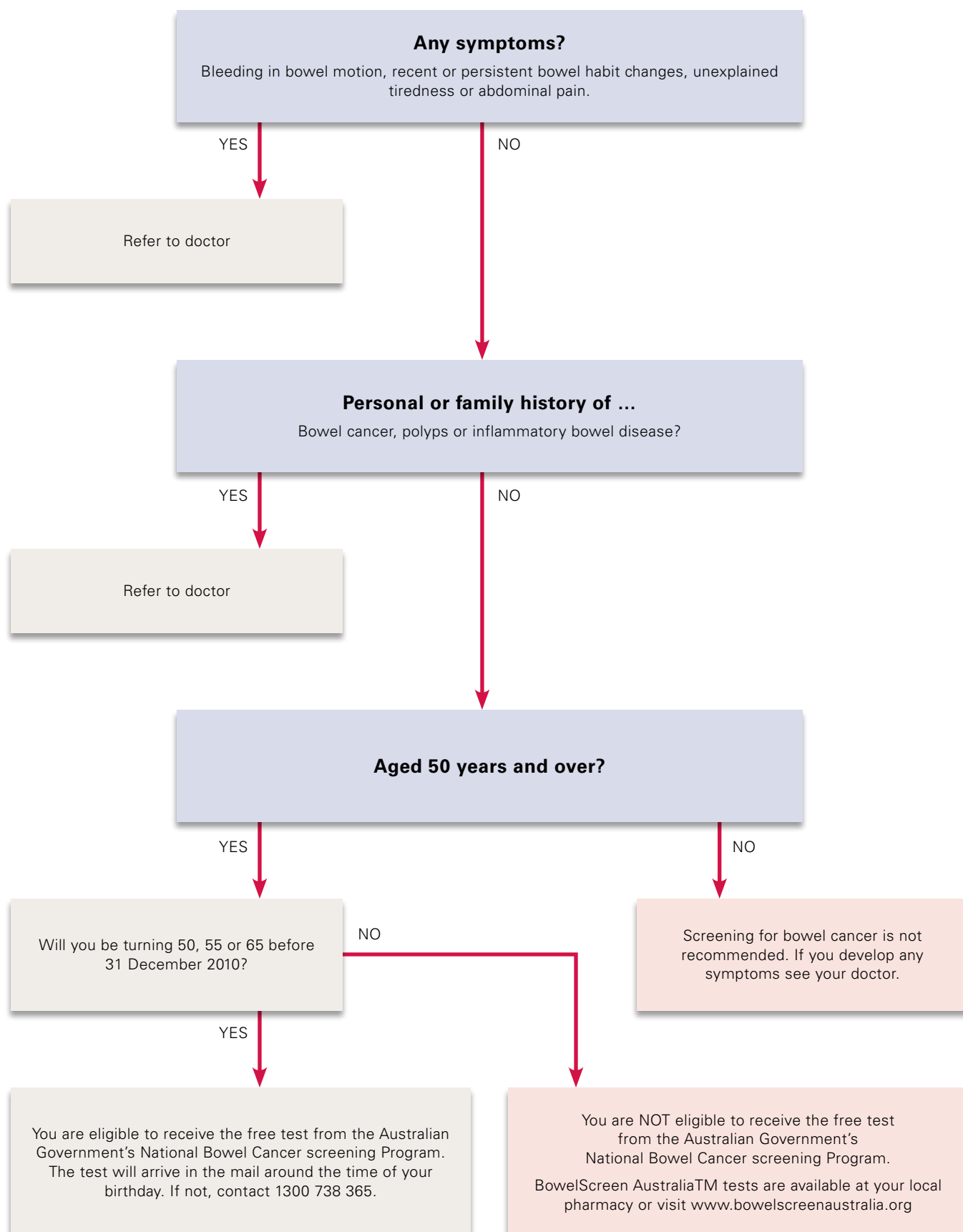
Screening programs are only effective if individuals participate in them, and are compliant to the screening pathway. Although Australia has one of the few population-based bowel cancer screening programs in the world, its implementation sees that most Australians are not offered the test. Pharmacists play a pivotal role, therefore, in educating their patients in the importance of such programs, and facilitating screening to those not yet invited to participate by the government.

## Case study 1

**History:** A 50-year-old female presents at the pharmacy preventative health clinic. She is asymptomatic and has no personal or family history of polyps or bowel cancer. The nurse recommends for her to complete an FOBT as per the guidelines for bowel cancer screening.

**Results:** The patient receives a positive FOBT result from the pathology lab. Understanding the significance of the result, she obtains

Figure 1. Bowel cancer screening pathway



a referral from her general practitioner to a gastroenterologist. Soon after this, a colonoscopy is scheduled, and upon examination, two polyps were encountered.

**Management:** Both polyps were removed at the time of colonoscopy by the gastroenterologist, and on histological examination the 12 mm polyp was a tubulo-villous adenoma with high grade dysplasia, whilst the 3 mm polyp was a hyperplastic polyp. She is informed that these polyps are benign, but the larger of which may have evolved into a bowel cancer over the next few years.

**Ongoing follow-up:** The patient is recommended to have a repeat colonoscopy in three years and encouraged to ask her asymptomatic family members over the age of 50 to screen with an FOBT.

## Case study 2

**History:** A 53-year-old male visited his pharmacist as he was feeling run down, and was concerned about some rectal bleeding he had noticed over the past month. The patient asked if he required a FOBT kit as he'd read an article recently about bowel cancer screening. His pharmacist informed him that the FOBT is a screening tool for bowel cancer in completely asymptomatic patients only, and he was promptly referred to his general practitioner for a discussion to visit a gastroenterologist for a colonoscopy.

The GP performed some blood tests, revealing a mild anaemia and iron deficiency. The patient was referred to a gastroenterologist.

**Histopathology report:** At colonoscopy, a 3 cm ulcerated, non-obstructing, low sigmoid tumour was encountered, and the rest of the colonoscopic examination was normal. Biopsies of the tumour revealed adenocarcinoma. He underwent a CT scan of his chest and abdomen, revealing no other distant spread, and was referred to a colorectal surgeon. A left hemicolectomy was performed, and the histopathology revealed a moderately differentiated adenocarcinoma invading halfway through the bowel wall, with no lymph node metastases (Duke's A stage). He is informed that he has a greater than 90% chance of cure, given that the cancer was detected at an early stage.

**Management:** The patient is informed that he should be followed up regularly to surveil for cancer recurrence and future cancers. This would include regular medical appointments for medical history and examination, blood investigations, and CT scanning. He should also have a repeat colonoscopy within three years.

**Ongoing follow-up:** The patient is also advised to encourage his siblings to undergo screening for bowel cancer by referral to a gastroenterologist for a colonoscopy, as their lifetime risk is 3–6-fold the population's risk, given his early diagnosis of bowel cancer.

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## Questions

A score of 3 out of 4 attracts three quarters of a credit point.

### 1. Which of these statements regarding bowel cancer is **true**?

- a) All bowel cancer occurs in patients over the age of 50.
- b) Bowel cancer is the leading cause of mortality in Australia.
- c) Despite spread to distant organs or lymph nodes, most bowel cancer is curable.
- d) 75% of bowel cancer occurs in patients with no known risk factors.
- e) Everyone in Australia should be screened for bowel cancer with a FOBT.

### 2. Which condition does **not** increase your risk of developing bowel cancer?

- a) Longstanding inflammatory bowel disease.
- b) Irritable bowel syndrome.

### c) Hereditary nonpolyposis CRC (HNPCC).

- d) Previous history of bowel cancer.
- e) Familial adenomatous polyposis (FAP).

### 3. Which of the following statements regarding iFOBT is **correct**?

- a) Patients require vitamin C supplementation prior to undergoing this test.
- b) All patients with bowel cancer are detected with this test.
- c) Guaiac-based faecal occult blood tests are superior to faecal immunochemical tests.
- d) It detects degraded human globin, otherwise known as heme products.
- e) Patients do not require any specific dietary modifications for this test.

### 4. Who should undergo a faecal immunochemical test to screen for bowel cancer?

- a) An asymptomatic 45-year-old woman with no family history of bowel cancer.
- b) A 50-year-old man with rectal pain and bleeding.
- c) A 63-year-old woman with abdominal pain and diarrhoea.
- d) An asymptomatic 57-year-old man with no family history of bowel cancer.
- e) A 53-year-old man who just found out his 54-year-old brother has been diagnosed with bowel cancer.

Submit your answers online at [www.psa.org.au](http://www.psa.org.au) before 1 October 2010.