

4 Cancer detection

For participants who return a positive FOBT kit result, colonoscopy is recommended to determine if the cause of the rectal bleeding is cancer-related. This chapter discusses outcomes for participants invited into the NBCSP in 2008 who underwent a colonoscopy as a result of a positive FOBT.

Fast facts

- Of the 16,436 participants with a positive FOBT, only 7,042 (42.8%) had valid Colonoscopy or Histopathology Report forms recorded; outcomes for the remaining 9,394 participants with a positive screening result were unknown.
- There were 63 confirmed and 239 suspected cancers found in those with outcome data available.
- The proportion of people for whom abnormalities were detected at colonoscopy increased with age.
- The proportion of abnormalities detected at colonoscopy was higher for males when compared with females.

How National Bowel Cancer Screening Program outcomes are determined for participants with a positive faecal occult blood test

In 2008, people turning 55 and 65 years (with the addition of those aged 50 years from 1 July 2008) were invited to screen in the NBCSP. An estimated 39.3% of these invitees agreed to participate by returning their completed FOBT kit. Of these participants, 6.6% returned a positive result, indicating the participant should consult their primary health care practitioner to investigate the use of a follow-up colonoscopy as a diagnostic step. This section presents outcomes from the NBCSP as at 31 January 2009 based on those people invited in 2008 who returned a positive FOBT and who proceeded to colonoscopy. Program outcomes at key pathway points are summarised in Figure 4.1.

Data for colonoscopy outcomes were derived from information recorded on the Colonoscopy Report form and the Histopathology Report form. Ultimately, for abnormalities detected at colonoscopy that were sent to histopathology, the final diagnosis must be returned on the Histopathology Report form. However, as reporting by clinicians to the NBCSP is not mandatory, a participant may have a Colonoscopy Report form, a Histopathology Report form or both recorded in the Register. As a result, outcomes were classified as follows:

- Confirmed cancers include suspected cancers at colonoscopy where a biopsy sample was sent to histopathology and confirmed as cancer by histopathology, plus any tissue samples from surgical resection or colonoscopic local excisions that were confirmed to be cancerous by histopathology. Confirmed cancers were given a higher priority than suspected cancer.

- Suspected cancers were abnormalities detected at colonoscopy that the colonoscopist suspects to be cancer but were not yet confirmed by histopathology. Their final diagnosis is not known until histopathology results are available.
- Adenomas confirmed by histopathology were classified next; they were categorised into three risk levels, as described in Appendix B.
- Polyps awaiting histopathology were polyps detected at colonoscopy that had not yet had an associated Histopathology Report form recorded. These may be either pre-cancerous (adenomous) or hyperplastic (non-adenomous) polyps, so may affect the current number of adenomas documented, once their histopathology results are known.
- Participants recorded as having no cancer or adenoma were those who had no polyps or suspected cancers detected at colonoscopy, or had polyps detected at colonoscopy that were classified as non-adenomous by histopathology.

Outcome information comes from the last steps in the NBCSP pathway, and by 31 January 2009, there were still many Colonoscopy and Histopathology Report forms yet to be returned.

Bowel abnormality detection at colonoscopy

Of the 685,915 people invited into the NBCSP in 2008, 251,152 returned FOBT kits, with 16,436 of these found to have blood in the sample, giving a positive result that should be followed up by colonoscopy. However, only 6,919 (42.1%) of the 16,436 participants with a positive FOBT had Colonoscopy Report form details recorded, meaning 9,517 participants had either not had a colonoscopy, or had no colonoscopy outcomes recorded.

Results from the 6,919 colonoscopies with a completed Colonoscopy Report form (Figure 3.4), showed there were 335 (4.8%) participants with a suspected cancer, 3,637 (52.6%) with one or more polyps found and 1,602 (23.2%) other diagnoses (Table 4.1). Around one in five participants with a positive FOBT, who had a Colonoscopy Report form returned, were found to have no abnormality. Suspected cancers and most polyps had samples sent to histopathology.

Overall cancer detection

After including the 1,204 Histopathology Report forms – many of which updated the original suspected colonoscopy diagnosis – the outcomes were as follows:

- 63 participants had bowel cancer found by the NBCSP and confirmed by histopathology
- 239 suspected bowel cancers were still awaiting histopathological diagnosis
- 979 participants were identified with confirmed adenomas by histopathology
- 2,467 participants had excised polyps still waiting on histopathology for classification
- 3,294 participants were found to have no abnormality (Table 4.2).

Histopathology Report forms were only available for 33.6% of samples sent to histopathology; therefore, results for the 2,706 participants awaiting histopathology outcomes were not available for analysis by 31 January 2009. Furthermore, another 1,699 known colonoscopies identified through Medicare claims had neither a Colonoscopy or Histopathology Report form recorded, and therefore, no colonoscopy outcome data.

Cancer detection by population subgroups

Cancer detection by state and territory

The higher rate of recorded follow-up in Queensland, South Australia and Tasmania (Table 3.13) meant these jurisdictions showed higher numbers of abnormalities found at colonoscopy (Table 4.2). However, this is mainly due to these states having more complete data for participant outcomes rather than a geographical link to higher bowel cancer incidence. For example, Queensland (4.3%) actually recorded a lower proportion of suspected and confirmed cancers per 100 colonoscopies than New South Wales (4.5%) and Victoria (5.0%). Therefore, colonoscopy follow-up rates between jurisdictions need to be taken into account when analysing Table 4.2.

Cancer detection by age and sex

Table 4.1 presents the recorded diagnoses from Colonoscopy Report forms for people invited into the NBCSP in 2008. The numbers recorded in this table under the various diagnoses do not take into account those cases where data from histopathology were also available and may have updated the colonoscopic diagnosis (for example, diagnosis of the suspected cancer as a confirmed cancer). Conversely, suspected cancers shown in Table 4.3 only include those that have not been updated by histopathology to their final diagnosis.

As would be expected from the known increase in bowel cancer incidence with age (Chapter 6), the incidence of abnormalities detected at colonoscopy increased with age (tables 4.1 and 4.3). Less than 2.0% of people aged 50 years who underwent a colonoscopy returned a suspected or confirmed cancer outcome compared with 5.6% for those aged 65 years (Table 4.3).

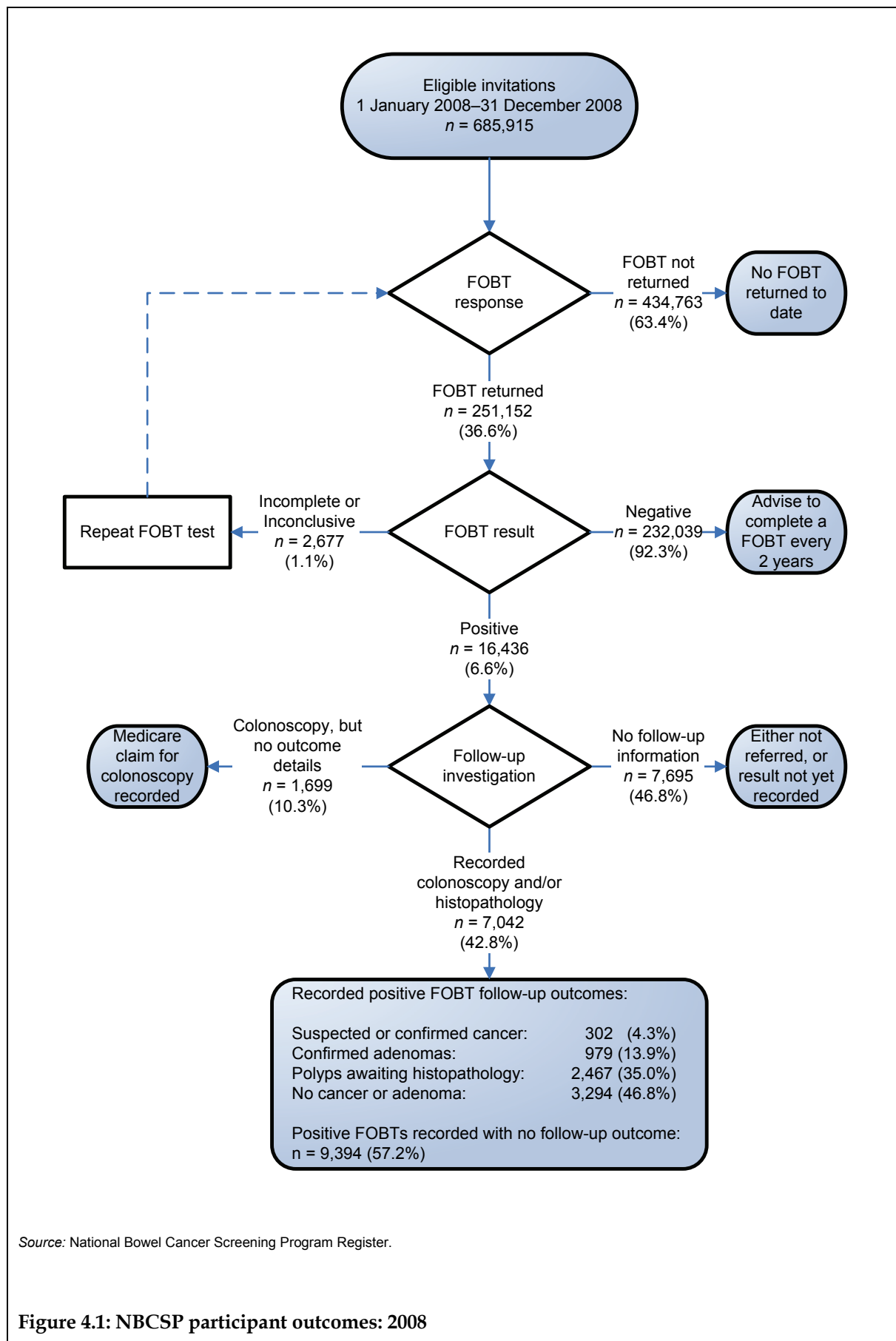
Similarly, males (4.9%) showed an incidence of suspected or confirmed cancers that was 1.4 times that of females (3.6%) (Table 4.3). This is consistent with known bowel cancer incidence in the Australian population (Chapter 6).

Cancer spread status

A biopsy sample of a suspected cancer is adequate to confirm a cancerous growth, but is not usually sufficient to obtain information on the stage and potential metastatic spread of the cancer. To gain such data, a tissue sample from a surgical resection (or colonoscopic local excision), plus lymph node biopsy or other clinical data are required.

Staging data is only available for 22 of the 63 confirmed cancers. Out of these 22, 2 were found to have spread to lymph nodes or metastasized to other secondary sites. The remaining 20 were detected at an earlier stage of spread; cancers diagnosed at these earlier stages are generally associated with improved patient prognosis (Morris, Lacopetta & Platell 2007). Biopsy samples accounted for the remaining 41 confirmed cancers (Table 4.4).

The scope of the NBCSP is to monitor participants up to the 'point of definite diagnosis' (DoHA 2005); however, staging information is often reliant on surgery, which is beyond the scope of the screening pathway.



Cancer detection tables

Table 4.1: Colonoscopic diagnoses recorded on Colonoscopy Report forms (excludes histopathology): 2008

		Suspected cancer	One or more polyps	Other diagnoses	No abnormality	All Colonoscopy Report forms
Males						
50 years	Number	11	217	67	90	385
	Per cent	2.9	56.4	17.4	23.4	
55 years	Number	68	889	312	223	1,492
	Per cent	4.6	59.6	20.9	14.9	
65 years	Number	123	1,121	316	196	1,756
	Per cent	7.0	63.8	18.0	11.2	
<i>Total</i>	<i>Number</i>	<i>202</i>	<i>2,227</i>	<i>695</i>	<i>509</i>	<i>3,633</i>
	<i>Per cent</i>	<i>5.6</i>	<i>61.3</i>	<i>19.1</i>	<i>14.0</i>	
	<i>95% CI</i>	<i>2.4–8.7</i>	<i>59.3–63.3</i>	<i>16.2–22.1</i>	<i>11.0–17.0</i>	
Females						
50 years	Number	7	150	112	142	411
	Per cent	1.7	36.5	27.3	34.5	
55 years	Number	45	568	387	423	1,423
	Per cent	3.2	39.9	27.2	29.7	
65 years	Number	81	692	408	268	1,449
	Per cent	5.6	47.8	28.2	18.5	
<i>Total</i>	<i>Number</i>	<i>133</i>	<i>1,410</i>	<i>907</i>	<i>833</i>	<i>3,283</i>
	<i>Per cent</i>	<i>4.1</i>	<i>42.9</i>	<i>27.6</i>	<i>25.4</i>	
	<i>95% CI</i>	<i>0.7–7.4</i>	<i>40.4–45.5</i>	<i>24.7–30.5</i>	<i>22.4–28.3</i>	
Persons						
50 years	Number	18	367	179	232	796
	Per cent	2.3	46.1	22.5	29.1	
55 years	Number	113	1,457	699	646	2,915
	Per cent	3.9	50.0	24.0	22.2	
65 years	Number	204	1,813	724	464	3,205
	Per cent	6.4	56.6	22.6	14.5	
Total	Number	335	3,637	1,602	1,342	6,916
	Per cent	4.8	52.6	23.2	19.4	
	95% CI	2.5–7.1	51.0–54.2	21.1–25.2	17.3–21.5	

Notes

1. Only colonoscopies with a Colonoscopy Report form (6,913) could be included in this analysis; colonoscopies identified from Histopathology Report forms or Medicare claims only were not included. However, 3 colonoscopies had unreliable abnormality values recorded. These were regarded as missing data and excluded from this table.
2. People aged 50 years were invited to screen from 1 July 2008. Hence, many will not have had sufficient time to proceed through the screening pathway to colonoscopy after notification of a positive FOBT result.

Table 4.2: Preliminary overall participant summary outcomes, by state and territory: 2008

State	Invitations issued ^(a)	Number screened ^(b)	Total positive FOBT	Colonoscopy recorded ^(c)	No cancer or adenoma ^(d)	Polyps awaiting histo-pathology ^(e)	FOBT positive					Confirmed advanced adenoma ^(f)	Suspected cancer ^(g)	Confirmed cancer ^(h)
							Confirmed diminutive adenoma ^(f)	Confirmed small adenoma ^(f)	Confirmed advanced adenoma ^(f)	Confirmed small adenoma ^(f)	Confirmed advanced adenoma ^(f)			
NSW	Number	72,295	4,736	1,373	653	554	18	24	62	54	8			
	Per cent				47.6	40.3	1.3	1.7	4.5	3.9	0.6			
Vic	Number	54,217	3,550	1,486	759	551	15	18	68	68	7			
	Per cent				51.1	37.1	1.0	1.2	4.6	4.6	0.5			
Qld	Number	57,324	3,655	2,124	910	666	61	99	296	65	27			
	Per cent				42.8	31.4	2.9	4.7	13.9	3.1	1.3			
WA	Number	74,639	1,852	618	219	294	16	13	57	17	2			
	Per cent				35.4	47.6	2.6	2.1	9.2	2.8	0.3			
SA	Number	25,288	1,735	969	515	272	19	26	107	20	10			
	Per cent				53.1	28.1	2.0	2.7	11.0	2.1	1.0			
Tas	Number	7,766	593	356	187	73	11	11	55	10	9			
	Per cent				52.5	20.5	3.1	3.1	15.4	2.8	2.5			
ACT	Number	3,777	212	79	34	40	0	0	1	4	0			
	Per cent				43.0	50.6	0.0	0.0	1.3	5.1	0.0			
NT	Number	1,426	103	37	17	17	0	0	2	1	0			
	Per cent				45.9	45.9	0.0	0.0	5.4	2.7	0.0			
Australia	Number	685,915	251,152	7,042	3,294	2,467	140	191	648	239	63			
	Per cent				46.8	35.0	2.0	2.7	9.2	3.4	0.9			

(a) 'Invitations issued' equals the number of eligible people who were issued an invitation to screen in the NBCSP.

(b) 'Number screened' equals the number of people who completed an FOBT kit and had results forwarded to the Register.

(c) 'Colonoscopy recorded' includes colonoscopies recorded via the Colonoscopy Report and/or Histopathology Report forms. It does not include colonoscopies identified through Medicare claims.

(d) No cancers were suspected at colonoscopy or confirmed non-cancerous by histopathology; no polyps identified at colonoscopy, or polyps confirmed as non-adenomas at histopathology.

(e) Polyps detected at colonoscopy and sent to histopathology for analysis. No Histopathology Report form received by Register.

(f) Confirmed adenoma figures were based on a combination of the Colonoscopy and Histopathology Report forms for a person received by the Register.

(g) Cancer suspected at colonoscopy but not yet confirmed by histopathology.

(h) Cancer confirmed by histopathology.

Table 4.3: Preliminary overall participant summary outcomes, by age and sex: 2008

		FOBT positive										
		Invitations issued ^(a)	Number screened ^(b)	Total positive FOBT	Colonoscopy recorded ^(c)	No cancer or adenoma ^(d)	Polyps awaiting histo-pathology ^(e)	Confirmed diminutive adenoma ^(f)	Confirmed small adenoma ^(f)	Confirmed advanced adenoma ^(f)	Suspected cancer ^(g)	Confirmed cancer ^(h)
Males												
50 years	Number	117,340	29,760	1,841	391	178	157	9	10	26	9	2
	Per cent					45.5	40.2	2.3	2.6	6.6	2.3	0.5
55 years	Number	136,570	45,950	3,149	1,520	605	613	32	52	156	50	12
	Per cent					39.8	40.3	2.1	3.4	10.3	3.3	0.8
65 years	Number	90,289	39,311	3,799	1,796	621	750	31	52	234	79	29
	Per cent					34.6	41.8	1.7	2.9	13.0	4.4	1.6
Total	Number	344,199	115,021	8,789	3,707	1,404	1,520	72	114	416	138	43
	Per cent					37.9	41.0	1.9	3.1	11.2	3.7	1.2
Females												
50 years	Number	117,488	35,958	1,739	421	267	122	3	4	20	5	0
	Per cent					63.4	29.0	0.7	1.0	4.8	1.2	0.0
55 years	Number	136,181	56,752	2,882	1,441	873	385	27	28	86	32	10
	Per cent					60.6	26.7	1.9	1.9	6.0	2.2	0.7
65 years	Number	88,047	43,421	3,026	1,473	750	440	38	45	126	64	10
	Per cent					50.9	29.9	2.6	3.1	8.6	4.3	0.7
Total	Number	341,716	136,131	7,647	3,335	1,890	947	68	77	232	101	20
	Per cent					56.7	28.4	2.0	2.3	7.0	3.0	0.6

(continued)

Table 4.3 (continued): Preliminary overall participant summary outcomes, by age and sex: 2008

		FOBT positive										
Persons		Invitations issued ^(a)	Number screened ^(b)	Total positive FOBT	Colonoscopy recorded ^(c)	No cancer or adenoma ^(d)	Polyps awaiting histopathology ^(e)	Confirmed diminutive adenoma ^(f)	Confirmed small adenoma ^(f)	Confirmed advanced adenoma ^(f)	Suspected cancer ^(g)	Confirmed cancer ^(h)
50 years	Number	234,828	65,718	3,580	812	445	279	12	14	46	14	2
	Per cent					54.8	34.4	1.5	1.7	5.7	1.7	0.2
55 years	Number	272,751	102,702	6,031	2,961	1,478	998	59	80	242	82	22
	Per cent					49.9	33.7	2.0	2.7	8.2	2.8	0.7
65 years	Number	178,336	82,732	6,825	3,269	1,371	1,190	69	97	360	143	39
	Per cent					41.9	36.4	2.1	3.0	11.0	4.4	1.2
Total	Number	685,915	251,152	16,436	7,042	3,294	2,467	140	191	648	239	63
	Per cent					46.8	35.0	2.0	2.7	9.2	3.4	0.9

(a) 'Invitations issued' equals the number of eligible people who were issued an invitation to screen in the NBCSP.

(b) 'Number screened' equals the number of people who completed an FOBT kit and had results forwarded to the Register.

(c) 'Colonoscopy recorded' includes colonoscopies recorded via the Colonoscopy Report and/or Histopathology Report forms. It does not include colonoscopies identified through Medicare claims.

(d) No cancers were suspected at colonoscopy or confirmed non-cancerous by histopathology; no polyps identified at colonoscopy, or polyps confirmed as non-adenomas at histopathology.

(e) Polyps detected at colonoscopy and sent to histopathology for analysis. No Histopathology Report form received by Register.

(f) Confirmed adenoma figures were based on a combination of the Colonoscopy and Histopathology Report forms for a person received by the Register.

(g) Cancer suspected at colonoscopy but not yet confirmed by histopathology.

(h) Cancer confirmed by histopathology.

Table 4.4: Cancer spread status, by age and sex: 2008

	Cancer confirmed by histopathology					All confirmed cancers
	Submucosa or into but not through muscularis propria	Through muscular propria	Spread of cancer to lymph nodes	Metastatic disease	Not reported	
Males						
50 years	1	0	0	0	1	2
55 years	4	2	0	1	5	12
65 years	5	2	0	0	22	29
<i>Total</i>	<i>10</i>	<i>4</i>	<i>0</i>	<i>1</i>	<i>28</i>	<i>43</i>
Females						
50 years	0	0	0	0	0	0
55 years	1	2	1	0	6	10
65 years	1	2	0	0	7	10
<i>Total</i>	<i>2</i>	<i>4</i>	<i>1</i>	<i>0</i>	<i>13</i>	<i>20</i>
Persons						
50 years	1	0	0	0	1	2
55 years	5	4	1	1	11	22
65 years	6	4	0	0	29	39
Total	12	8	1	1	41	63

Source: Histopathology Report form sections 4B and 4C.