The National Bowel Cancer Screening Program

Consequences for practice

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Background

The Australian Government introduced the National Bowel Cancer Screening Program (NBCSP) in 2006, in which Australian residents are offered a faecal immunochemical test (FIT) for haemoglobin when they turn 50, 55 and 65 years. We describe waiting times, quality of existing colonoscopic services, and quality of documentation of ongoing surveillance activities in those with a positive FIT.

Methods

A retrospective review of case notes of patients undergoing colonoscopy in public tertiary hospitals in South Australia, identified through the NBCSP (pilot and phase 1 and 2 groups).

Results

Records on 433 patients were assessable, representing 65% of public NBCSP cases. Colonoscopy waiting times varied, with only 23% of patients undergoing colonoscopy within the 30 day benchmark. The polyp retrieval rate was 98.4%. Surveillance recommendations after a polyp result were considered appropriate in 55% cases; with inappropriate intervals usually being set too early (59%). Where structured recall systems were utilised, appropriateness of follow up surveillance significantly improved.

Conclusion

Overall, quality of colonoscopy was good. Waiting times were delayed with a minority of cases meeting the benchmark 30 day waiting time. Recommended surveillance colonoscopy intervals deviated from the guidelines in nearly half of patients, with a tendency to colonoscope too frequently according to the guidelines. More structured recall systems would be expected to reduce this excessive workload.

Keywords

colorectal cancer; mass screening; delivery of health care

Colorectal cancer (CRC) screening using faecal occult blood tests (FOBT) has been demonstrated to reduce mortality from CRC.[1–3] After a pilot study conducted from 2002 to 2004, the Australian Government introduced the National Bowel Cancer Screening Program (NBCSP) in 2006, in which Australian residents are offered a faecal immunochemical test (FIT) for haemoglobin when they turn 55 and 65 years of age (phase 1). In 2008, this was extended to individuals who turned 50 years of age (phase 2). As part of the 2012–13 Federal Budget, the Australian Government announced that the NBCSP will be expanded to include Australian residents turning 60 years of age from 2013 and those turning 70 years of age from 2015. Investigative colonoscopy is recommended for all patients with a positive FIT result.

The NBCSP is composed of a centralised federal register that manages FIT invitations; general practitioners, who provide patient education, referral and register notification for positive tests; and 'usual care' hospital processes, which manage colonoscopy investigation and patient follow up.[4] The referral by GPs for colonoscopic investigation assumes that current 'usual care' provides an adequate service both in terms of the colonoscopic procedure and appropriate patient follow up if an abnormality is detected.

There is currently no formal recall or surveillance provision within the NBCSP. This is concerning, as pilot study data has demonstrated that approximately 20% of NBSCP positive participants who undergo colonoscopy will have a neoplastic polyp removed[5] and require ongoing colonoscopic surveillance within the healthcare system. It has also been previously demonstrated that without a dedicated surveillance program for high risk subjects, such as those found to have an adenoma or a family history of CRC, that National Health and Medical Research Council (NHMRC) guidelines are followed in the minority of cases, with patients lost to follow up or subjected to too frequent surveillance.[6] The latter unnecessarily increases colonoscopic workloads and decreases the cost effectiveness of surveillance. Therefore, better understanding of the impact of the NBCSP on colonoscopic and surveillance services may help to plan appropriate and efficient services for the future.[7]

This study reports on the public hospital treatment in South Australia of NBCSP participants, exploring events from the time a FIT-positive person reported for colonoscopy. As data were not readily available from the central register, patients were identified from the register of South Australian metropolitan public hospitals. Objectives of this review included:

- determining waiting times for colonoscopic services
- assessing the quality of documentation in relation to patient assessment, colonoscopy data and follow up
- documentation of ongoing screening and surveillance activities.

Methods

A retrospective clinical review of case notes was undertaken of patients who had tested FIT-positive through the NBCSP (inclusive of pilot, phase 1 and 2 participants) and who had

undergone a colonoscopy in the period 1 January 2006 to 31 December 2009 at metropolitan tertiary hospitals in South Australia. People who received a FIT kit and subsequent positive result during the 'faulty kit' period from December 2008 to May 2009, were excluded from the audit.

The NBCSP nurse coordinators at each hospital provided a list of patients who had been identified as testing positive via the NBCSP, as notified by the central registry and stated in the GP's referral letter and who had attended for investigative colonoscopy. Case notes were ordered from each hospital's medical records department for review. Although every attempt was made to review all eligible patient case notes, including multiple visits to each participating hospital, not all case notes were available. Eleven patient case notes could not be accessed for auditing.

Although clinically important, no attempt was made to follow up NBCSP positive patients who were referred privately, who were not referred or who did not attend for colonoscopy, as this audit focused on the performance of the public hospital system.

Data were collected from six metropolitan (southern, western, central and northern) public tertiary hospitals (433 patients; estimated 65% of NBCSP-positive patients known to have gone through the public system in the review period, based on NBCSP nurse coordinator reports). The review investigated elements of each patient's journey through the hospital system, as recorded in the patient's case notes, including:

- colonoscopy waiting times – from the GP's referral to the clinic appointment and then from the clinic appointment to the colonoscopy; with overall waiting time defined as the time from the GP's referral to the colonoscopy
- pre-colonoscopy assessment and documentation – documented CRC family history, including first degree relative(s) who had had CRC or hereditary conditions such as hereditary non-polyposis CRC (HPNCC); bowel symptoms, such as changes in bowel patterns, abdominal pain or visible faecal blood; and evidence of a signed consent form
- the colonoscopic procedure and outcomes – colonoscopist, use of an anaesthetist, documented complications (inclusive of hypotension, desaturation, bowel perforation, nausea, vomiting, abdominal pain and peri-rectal bleeding) and hospital admissions
- retrieval and detection rates – documentation of polyp retrieval and polyp and cancer detection rates
- the planned surveillance program – appropriateness of the recommended surveillance colonoscopy and the utilisation of a formal recall system for surveillance colonoscopy.

The audit tool for this review was developed using the NHMRC *Guidelines for the prevention, early detection and management of colorectal cancer*[8] and current best practice as identified in the literature. Two researchers with a health and gastroenterology background (AB, HL), undertook the review of the case notes using this audit tool, with cross referencing of cases selected at random to ensure reliability.

All statistical analyses were conducted using SPSSv17. Data were analysed using the paired sample student t-test.

Results

Patient profile

The age of NBSCP participants with a positive FIT and who presented for colonoscopic investigation ranged from 50–79 years (median 65 years), with the percentage of males presenting being higher than females (*Table 1*).

Colonoscopy waiting times

The average waiting time between GP consultation and subsequent colonoscopy was 52 days. The average waiting time between GP consultation and hospital clinic appointment was 31 days, while the average waiting time between this appointment and undergoing colonoscopy was 25 days (*Table 2*): 23% (77/333) had their colonoscopy within the benchmark waiting time of 30 days, with the majority (44%,146/333) undergoing colonoscopy in a 30–59 day timeframe (*Figure 1*).

Colonoscopy data

A signed consent form was present in 87% (377/433) of records, documentation of a family history of CRC was evident in 73% (316/433) and 85% (368/433) had evidence of questioning about the presence of bowel symptoms (*Table 3*). Colonoscopy was predominantly performed by a consultant gastroenterologist (61%, 264/433), with an anaesthetist present in a small number of complex cases (14%, 61/433) (*Table 3*).

The overall polyp detection rate in this sample was 51.5% (223/433), constituted by (per patient prevalence): 10.2% (44/433) hyperplastic polyps, 18.9% (82/433) adenomas, 16.4% (71/433) advanced adenomas (defined as a large ≥1 cm adenoma with high grade dysplasia and/or villous changes)[8] and 3.2% (14/433) CRC (based on histopathological evaluation).

A small percentage of polyps (2.8%, 12/433) were unable to be retrieved and/or classified. A small percentage (1.8%, 8/433) of colonoscopies required rescheduling due to poor bowel preparation and visualisation (ie. the colon to the point of the caecum could not be completely visualised).

The recorded complication rate following colonoscopy was low (3.5%,15/433). Minor complications of nausea and/or abdominal pain occurred in a minority of patients, while serious complications of hypotension, bowel perforation, desaturation requiring intubation or atrial fibrillation were documented in four patients (*Table 3*). There were no documented cases of peri-rectal bleeding.

Table 1. Profile of FIT-positive NBCSP participants presenting for investigative colonoscopy

Cases reviewed	**433**
Age (years)	
50	23 (5%)
55	161 (37%)
65	202 (47%)
>70	47 (11%)
Gender	
Female	202 (47%)
Male	231 (53%)
SES*	
Low	204 (47%)
Medium	71 (16%)
High	158 (37%)

*SES = socioeconomic status, based on the Australian Bureau of Statistics Index of Relative Socioeconomic Advantage and Disadvantage for residential suburub. 'Low' was defined as a rating of 1–3, 'medium', 4–6 and 'high', 7–10

Postcolonoscopy recommendations

In this sample, 26.6% (115/433) of patients had no abnormality detected at colonoscopy. The NHMRC recommendation for these patients is to repeat the FOBT in 5 years[8] (with recall and referral through the GP as the NBCSP is not funded to provide this). Documentation of advice to this effect was found in only 23% (27/115) of case notes (*Table 4*).

Table 2. Clinic and colonoscopy waiting times for NBCSP participants (mean days + SD)

	Number*	Waiting time
From initial GP referral to clinic appointment	347	31 days (+ 27 days)
From clinic appointment to colonoscopy	364	25 days (+ 23.8 days)
From initial GP referral to colonoscopy	333	52 days (+ 34.2 days)

* Represents the number of cases where waiting time data was available

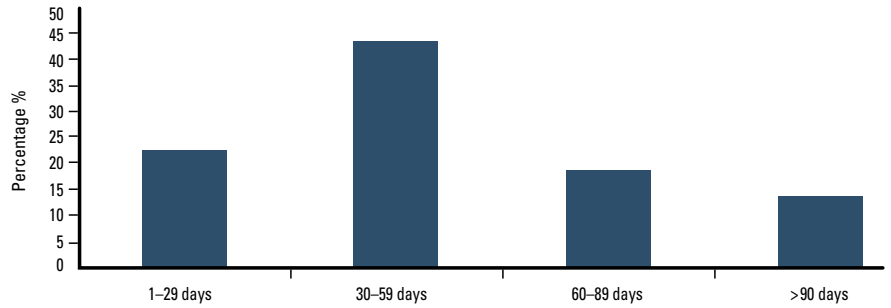

Figure 1. Colonoscopy waiting times – GP referral to actual colonoscopy

Table 3. Information on colonoscopy documentation, performance and complications

	Number (%)
Case note documentation	
Evidence of signed consent	377/433 (87)
Relevant family history of CRC	316/433 (73)
Relevant bowel symptoms	368/433 (85)
Colonoscopy performed by:	
• gastroenterology consultant	264/433 (61)
• gastroenterology registrar	42/433 (10)
• colorectal surgeon	121/433 (28)
• surgical registrar	6/433 (1)
Anaesthetist assisted	61/433 (14)
Colonoscopy complication rate	15/433 (3.5)
Documented major complications	
• Hypotension	2/433 (0.5)
• Desaturation	1/433 (0.2)
• Bowel perforation	1/433 (0.2)
Hospital admissions postcolonoscopy	
Number	3/433 (0.7)
Length of stay (days)	1, 2, 69*

*Length of stay was related to a bowel perforation which required surgery and ICU admission

Surveillance recommendations and management was aligned with NHMRC guidelines for 55% (72/131) of patients after a polyp or neoplasia was detected. For these patients, surveillance recommendations were earlier than required by the guidelines (32/55), later than required by the guidelines (9/55), not recommended in opposition to guidelines (13/55) or undocumented (1/55) (*Table 4*).

Some hospitals had a formal colonoscopy recall system, with the overall enrolment in such a system being 40% (86/213, *Table 4*). This enrolment was predominantly (72/86) in hospitals within the southern Adelaide region, where there is a formal recall program (the Southern Cooperative Program for the Prevention of Colorectal Cancer, 'SCOOP').[6] Public hospitals with a structured recall program were also more likely to document appropriate recommendations (as per NHMRC guidelines) compared to hospitals without a structured program (89% vs 58%; p=0.003).

Discussion

The NBCSP is an amalgam of a centralised public health process leading into an ad hoc 'usual care' process for participants who test positive and who require colonoscopic investigation. Data collection varies in quality and accessibility between these two elements; this audit has been undertaken with a view to better understanding the outcomes in the usual care sector in terms of colonoscopy waiting times, quality of documentation and ongoing surveillance activities.

A key issue is the time spent waiting for colonoscopy after the initial GP consult. The average waiting time of 52 days compares favourably to other published Australian data,[9] but is higher than in the United Kingdom CRC screening study (average 30–42 days),[10] with only 23% of cases reviewed in this study meeting the recommended benchmark of 30 days. This waiting time is likely to vary enormously by hospital and geographic area, but it is important for GPs to be aware of and to discuss this with patients who are identified as FIT-positive through both the NBCSP and 'usual practice'. The NBCSP provides an excellent opportunity to identify those patients who have a significant family history of CRC or those who have symptoms that warrant personalised attention. Although the literature emphasises the importance of documenting

Table 4. Recommended follow up according to findings at colonoscopy*

	Number (%)
No abnormality – was a follow up recommendation made?	
Not documented	18/115 (16)
Yes	27/115 (23)
No	70/115 (61)
Neoplasia found – was the follow up recommendation appropriate?	
Not documented	11/131 (8)
Yes	72/131 (55)
No	48/131 (37)
Recommended follow up colonoscopies – not in accordance with NHMRC guidelines	
Interval earlier	32/55 (59)
Interval later	9/55 (15)
Not Indicated	13/55 (24)
No recommendation	1/55 (2)
Documentation of entry into a formal recall system?	
Yes	86/213 (40)
No	128/213 (60)
Type of colonoscopy recall system	
SCOOP#	72/86 (84)
Waiting list	14/86 (16)

*This table represents data from patients who had no abnormality detected as well as patients who had a neoplasia detected. Patients who had other pathologies detected were excluded

#This program is aimed at improving the coordination and management of people at risk of developing colorectal cancer in the southern region of Adelaide, South Australia

family history and bowel symptoms,[8] this review demonstrated variable documentation of these. This has implications for the individual (and possibly their family members), both in terms of genetic counselling and appropriate CRC surveillance for higher risk groups.

The quality of the colonoscopy procedure was high as judged by the polyp detection rate of 51.7%, similar to the overall NBCSP polyp detection rate of 51.6%[11] and detection rates of 45–66% reported in the literature.[12,13] Documentation of consent for colonoscopy was 87%, warranting further exploration and hospital action.

Significant complications occurred in approximately one in 100 patients with one serious complication (bowel perforation) requiring surgery and an extended hospital admission. This is of particular relevance in a screening setting where healthy patients are asked to undergo an invasive procedure. The incidences of minor complications are on par with other studies.[11,14–16] However, these rates should be interpreted with caution, as the case notes that were not available for review may have had additional recorded complications.

Follow up recommendations after colonoscopy deviated most from evidence based practice. The interval rates identified in this audit are similar to those found in a colonoscopy audit undertaken in the United Kingdom which found that 58.9% of patients were booked for a procedure earlier than recommended and 23.4% did not require any further surveillance.[17] The earlier than required scheduling of surveillance colonoscopy has potential major workload implications and risks for the patient who is undergoing unnecessary procedures. Patients who underwent their colonoscopy at a public hospital with a structured recall system were much more likely to be appropriately followed up, demonstrating that structured, centralised recall systems should be established and regarded as an integral component to any national CRC prevention strategy.

In terms of the GP's role in follow up surveillance, GPs have access to guidelines on CRC screening[18] and are encouraged to familiarise themselves with these. They should be aware that no centralised recall system exists, that hospital surveillance recommendations may be inappropriate and therefore ensure that their own recall systems are activated and surveillance intervals appropriate.

Limitations of this study

This clinical audit provides a snapshot of how NBCSP FIT-positive participants are managed in the public sector in South Australia. However, the retrospective nature of the data collected, the incomplete waiting times data and the fact that approximately two-thirds of all publicly managed NBCSP cases where captured in this review needs to be taken into consideration when considering the implications of these results. Despite such limitations, the audit does provide useful information on the colonoscopy screening pathway, variation in outcomes and where management and care could be improved on in the future.

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