BowelScreen Programme Report 2018 – 2019

Round Three

An tSeirbhís Náisiúnta Scagthástála
National Screening Service

BowelScreen
An Clár Náisiúnta Scagthástála Putóige
The National Bowel Screening Programme

BowelScreen

An Clár Náisiúnta Scagthástála Putóige
The National Bowel Screening Programme

Screening charter

About BowelScreen – The National Bowel Screening Programme

- BowelScreen – The National Bowel Screening Programme offers free bowel screening to men and women aged 60 to 69. The BowelScreen programme will over time be offered to all people aged 55-74.
- The bowel screening test is carried out in your own home.
- Bowel screening can detect changes in the bowel before they become cancer.
- Bowel screening aims to find bowel cancer at an early stage when it is easier to treat.

Our commitment to you

- We will respect your privacy, dignity, religion, race and cultural beliefs.
- We will arrange services and facilities so that you can use the service, including special needs.
- We will keep your screening records safe and confidential.
- We will welcome your views and take them into account.
- We will provide a Freephone information and support line during normal working hours.
- We will offer you free screening every two years while you are aged 60 to 69, once you become known to the programme.
- We will provide information explaining each step in the screening process.
- We will send your home test kit, instructions and information to you within five working days of you letting us know you want to take part in the programme.
- We will screen your test in a laboratory that meets high quality standards.
- We will send your test result to you and to your GP (family doctor) within four weeks.

If you take part in the screening programme and your test result is not normal

- We will offer you a colonoscopy – a special examination of your bowel.
- A colonoscopy will be offered within four weeks of you being assessed as suitable.

If you need treatment

- We will tell you sensitively and honestly.
- We will explain the treatment available to you.
- We will encourage you to share in decision-making about your treatment.
- We can include your partner, friend or relative in any discussions if that is what you want.
- We will offer you surgery or other treatment within 25 working days after your colonoscopy, if you need it.
- We will offer you support from a nurse before and during your colonoscopy.
- You have the right to refuse treatment, to get a second opinion or to choose an alternative treatment.

Ways you can help us

- Read any information we send you and if you have any questions you can call the Freephone information and support line.
- Follow the instructions with your BowelScreen home test and return the test to us within seven days.
- If we refer you for more tests, keep your appointment time and give at least three days' notice if you need to change your appointment.
- Tell us if you have special needs that we need to plan for.
- Tell us if you change your address.
- Tell us what you think of the service and the care you received. Your views will help us to improve the service for you and for other people.

Freephone
1800 45 45 55
www.bowelscreen.ie

An tSeirbhís Náisiúnta Scagthástála
National Screening Service

CR-COM-005 Rev02

Contents

Abbreviations used in this report

AA	advanced adenomas
ADR	adenoma detection rate
CDR	cancer detection rate
CT	computed tomography
FIT	Faecal Immunochemical Test
HSE	Health Service Executive
NSS	National Screening Service
PPB	post-polypectomy bleeding
QA	quality assurance
QIP	quality improvement plan
SSL	sessile serrated lesions

Introduction from the Clinical Director of BowelScreen

BowelScreen is one of the National Screening Service's three cancer-screening programmes. It aims to detect colorectal (bowel) cancer as early as possible; and to identify and remove adenomas or polyps (abnormal tissue growths). This greatly reduces the risk of future bowel cancer development.

I am pleased to present the key findings arising from the third round of colorectal screening in Ireland.

The figures reported relate to participants invited for screening between 01 January 2018 and 31 December 2019, the period referred to as Round Three. Some of these participants may have been screened and/or treated in 2020. The results clearly indicate that BowelScreen makes a significant difference to the health of the people of Ireland.

Colorectal cancer in Ireland

Bowel cancer (colorectal cancer) is one of the most common types of cancer diagnosed in Ireland affecting around 2,800 people every year[1]. It is the second most common cause of cancer death in Ireland, and it affects both men and women. The number of new cases is expected to increase significantly over the next 10 years, due mainly to an increasing and ageing population[2].

As the vast majority of these cancers are thought to arise from benign growths known as adenomas, a screening programme that can detect these adenomas early will save many lives.

Colorectal screening

The primary objective of colorectal cancer screening is to detect and remove pre-cancerous adenomas in the lining of the bowel, thereby making colorectal cancer screening a truly preventative health measure.

This has the effect of potentially reducing the burden of treatment on both the individual and the health system. It reduces the stress, disruption and anguish that cancer diagnoses and subsequent treatment can bring to the individual, their family and their wider community.

About the BowelScreen programme

The BowelScreen colorectal screening programme began in 2012 and offers free screening to men and women aged 60-69 on a two-yearly cycle.

As its primary screening tool, the programme uses the faecal immunochemical test (FIT) which detects a level of blood in the stool, and it operates on an automated testing platform. Ireland was one of the first countries to adopt this technology for organised population-based colorectal cancer screening. One of the advantages of using this test in a population-based screening programme is that it can be self-administered in the privacy of the individual's own home.

No screening test is 100 per cent accurate; the FIT relies on a cancer, or adenoma, bleeding at the time of the test. Thus, there will be false negatives when the FIT is negative and a lesion is present; and, alternatively, there will be false positives when the FIT is positive, and a subsequent colonoscopy shows no significant cause. In some of these cases, it may be that the FIT detects blood from benign conditions such as piles, rather than adenomas linked to cancer.

For the majority (approximately 95 per cent) of the population, the FIT will be the only test required. For a small minority (approximately 5 per cent), a further test (colonoscopy) at a hospital-based screening colonoscopy unit will be necessary.

Third screening round results

It is accepted that bowel cancer can be a treatable disease, if detected early. The evidence indicates that there is about a 90 per cent chance of living more than five years following diagnosis, if cancer is detected at Stage 1 of the disease[3].

The clinical results for the third screening round are encouraging. BowelScreen invited 534,926 eligible people; screened 224,153 participants; performed 9,385 colonoscopies; and detected 304 cancers. This represents a screening uptake rate of 41.9 per cent and a cancer detection rate of 1.4 per 1,000 participants screened.

In addition, 8,616 adenomas or polyps were removed. These are abnormal tissue growths that can become cancerous at a later stage. The removal of pre-cancerous polyps greatly reduces the risks of future bowel cancer development. These individuals are offered further surveillance colonoscopies to detect and treat any adenoma recurrence at a later date.

In Round Three, 2,817 people attended for a surveillance colonoscopy.

In addition, 940 sessile serrated lesions (SSL) were detected. SSLs are flat, pre-cancerous polyps that can develop into bowel cancer. They can be difficult to visualise at colonoscopy, which is why excellent bowel preparation is so important. The programme is one of the first international bowel screening services to report on these lesions.

Concluding remarks

BowelScreen is providing an essential service to the Irish public and this could not be achieved without the dedication and professionalism of those individuals who work to ensure that services are delivered to high standards.

I would like to thank the NSS's Programme Evaluation Unit for compiling the data contained in this report. I also wish to acknowledge the BowelScreen Programme Manager, the BowelScreen team, the IT Department, and those who provide leadership and advice in the Executive Management Team meetings.

In addition, I must extend my thanks to past and present members of our Clinical Advisory Group and Quality Assurance Committee, for their ongoing professional dedication, input and support. I would also like to acknowledge the work of the authors and contributors who helped produce the second edition of the Quality Assurance standards[4], which were published in 2017.

Finally, it is important to note that the colonoscopy element of the BowelScreen programme would not be possible without the professional input of the advance nurse practitioners and clinical nurse specialists in the colonoscopy screening centres, who deliver excellent services in conjunction with the consultant endoscopists, surgeons and histopathology laboratories.

I am greatly encouraged that the additional support provided by the National Endoscopy Working Group of the HSE, the Acute Hospitals Division, and the Department of Health, will ensure that the programme continues to progress and mature.

Professor Pádraic Mac Mathuna,
Clinical Director (Interim)

Message from the Programme Manager of BowelScreen

Since the establishment of BowelScreen in 2012, the NSS has made significant progress in developing the programme. Strategic planning for the development and implementation of BowelScreen is provided by the Executive Management Team and the Colorectal Operational Committee.

These groups incorporate support from across the NSS, including the Programme Evaluation Unit, Public Health, Information Technology, Screening Promotion, Communications, Quality Assurance, Facilities, Human Resources, Finance and Procurement, as well as BowelScreen staff.

The programme is dependent on maintaining and developing relationships with all of our hospital partner sites, nursing teams, managers, gastroenterologists, endoscopists, histopathologists, surgeons and computed tomography (CT) clinicians.

I wish to acknowledge the work and dedication of these individuals in the continued delivery of the programme, as well as the team involved in the delivery of the Patient and Public Partnership Strategy.

I also wish to recognise the contribution of BowelScreen laboratory providers, postal services and Freephone staff. Their dedication and professionalism have ensured that, during the third screening round, more than 530,000 invitation letters were issued promptly, along with the many thousands of reminder, recall, result and GP letters; over 100,000 calls pertaining to BowelScreen were responded to; and that nearly a quarter of a million home testing kits were dispatched, and analysed on time.

The programme continues to work with the Acute Hospitals Division of the HSE, the Department of Health and the National Endoscopy Programme. It continues to work in partnership with the National Endoscopy Working Group to promote and support service improvements across all hospital groups.

The workstreams identified by the group include developing plans for capacity and demand, standardised referral pathways, validation and scheduling, quality assurance and training. Since mid-2018, FIT kits have been sent automatically to previous participants, without them having to contact the programme.

Training of health professionals

The encouragement of a trusted health professional is a key motivation in a person's decision to engage with screening. On this basis the screening promotion service provided training on BowelScreen to the following groups and representative bodies:

- Irish Practice Nurses Association
- GP trainees
- Student nurses at undergraduate level in the major academic institutions nationally
- Trainee public health nurses
- Non-specialist nurses working in an acute setting - in partnership with the National Cancer Control Programme
- HSE Traveller health workers.

Focus on men

We continued to develop our efforts to engage directly with men because the uptake rate for men is lower than that for women. This included:

- Ongoing engagement with the Men's Sheds Association.
- Promotion of BowelScreen during Men's Health Week.
- Promotion of BowelScreen though the Marie Keating Foundation.

In Round Three, the programme continued to work to ensure the quality and equity of the service; to contact groups that are traditionally difficult to reach; and ultimately to increase the number of people who participate in BowelScreen.

There are continuous improvements to be made, however, these should not detract from the fact that the establishment of the programme has been a significant milestone in the improvement of cancer detection in Ireland.

Hilary Coffey Farrell,
Programme Manager

Highlights of 2018-2019

534,926
eligible people invited

224,153
satisfactory FIT tests completed

41.9%
screening uptake rate

304
cancers detected

3,212
participants found to have adenomas*

8,616
adenomas removed*

451
participants with advanced adenomas removed*

55.1%
adenoma detection rate*

* on index colonoscopy

Programme Performance

Screening activity overall

The figures reported relate to people invited by BowelScreen for screening between 01 January 2018 and 31 December 2019 (Round Three). Therefore some of these people may have completed their pathway and have been screened and/or treated into 2020.

Programme standards, against which performance is measured, are based on the *Guidelines for Quality Assurance in Colorectal Screening*[4].

During 2018 and 2019, 534,926 people were invited by BowelScreen for screening (Table 1). Of these, 249,112 consented to screening, and 224,153 satisfactory faecal immunochemical tests (FIT) were completed and returned. This reflects a screening uptake rate based on the eligible population of 41.9 per cent, which was a small improvement from the first and second rounds (40.2% and 41.4% respectively) but below the standard of 50 per cent. BowelScreen can be most effective in reducing mortality from bowel cancer in the population, if at least 50 per cent of eligible participants attend for screening.

Adenomas were detected in 3,212 participants undergoing index colonoscopy giving an adenoma detection rate (ADR) of 55.1 per cent which was within the programme standard of >45%. As most bowel cancers develop from adenomas, their removal at colonoscopy provides as an integral aim of the programme, a preventative measure that lowers the risk of developing bowel cancer. In Round Three, 304 cancers were detected.

Table 1: BowelScreen screening performance Rounds Two and Three

Performance Parameter	Total Round Three	Total Round Two	Quality Assurance Standard
Number of eligible people invited	534,926	546,767	
Number of people consented	249,112	239,682	
Number of FIT returns	224,762	226,671	
FIT returns by consent	90.2%	94.6%	
Number of FIT satisfactory	224,153	226,374	
Uptake	41.9%	41.4%	≥50%
Number of FIT positive	7,397	8,204	
FIT positive rate	3.3%	3.6%	
Number of colonoscopies completed	9,385	9,008	
Number of cancers detected	304	410	
Cancer detection rate (CDR) per 1,000 screened	1.36	1.81	
Number of participants with adenomas on index colonoscopy	3,212	3,700	
Adenoma detection rate (ADR) on index colonoscopy	55.1%	56.7%	>45%

To undertake bowel screening, participants are invited by letter to take a FIT test, which is a home test kit that is returned for analysis by a contracted laboratory. Approximately 96 per cent of participants' tests are returned by the laboratory as a normal result. If a person has a positive (not normal) test result, they move to the endoscopy stage of the pathway, where they are offered a colonoscopy in one of the programme's colonoscopy units. Once this is completed, the person is either discharged, offered a surveillance scope at a planned interval to monitor them, or offered treatment if a cancer has been diagnosed.

Uptake by type of screen, gender and age group

In 2018, BowelScreen began its third round of screening. The statistics presented in this report pertain to those people who received an invitation in Round Three between 01 January 2018 and 31 December 2019. Some people were invited for their first screen (initial participants) having only become eligible, or known to the programme; and some people who attended in previous rounds were re-invited for their second or subsequent screen (subsequent participants).

Initial participants comprise people who are being invited for the first time, and includes those who were invited in previous round(s), but failed to take up the offer of screening, and were re-invited in Round Three. Uptake of initial participants was higher in the younger age group in both males and females (Table 2). Female initial uptake was higher than male uptake across both age groups. Most of those in the older age group were invited in previous rounds but did not take up their screening opportunity. Evidence from other screening programmes has shown that this behaviour often persists over time and that these people are less likely to attend in the next rounds, leading to low uptake among initial participants. It is noted that the number of initial participants is reducing which is to be expected as the programme matures.

Table 2: Initial participants by gender and age group in Round Three

Performance Parameter	Male		Female		Total
	60-64	65-69	60-64	65-69	60-69
Number of eligible people invited	134,002	59,468	117,684	49,921	361,075
Number screened	26,351	5,577	32,222	5,338	69,488
Uptake	19.7%	9.4%	27.4%	10.7%	19.2%

The term ‘subsequent participants’ refers to those who have previously completed a satisfactory FIT with BowelScreen. These people are issued FITs directly in the next screening round if they are within the eligible age range. Uptake was 89.5% overall and was higher among females across both age groups (Table 3). Uptake was lower in younger age groups compared to older age groups. These trends are similar to those found in other bowel screening programmes.

Table 3: Subsequent invites by gender and age group

Performance Parameter	Male		Female		Total
	60-64	65-69	60-64	65-69	60-69
Number of eligible invited	33,573	44,735	42,153	51,582	172,043
Number screened	30,100	39,629	38,256	46,027	154,012
Uptake	89.7%	88.6%	90.8%	89.2%	89.5%

Uptake in Round Three by age, gender and type of invitation (initial or subsequent) against the QA (Quality Assurance) standard is shown in Figure 1. This demonstrates that subsequent participants are remaining with the programme in high numbers. This is an indication that these people find the test and the service acceptable and are happy to participate when invited in subsequent rounds. The uptake rate among initial participants remains a challenge, with low uptake reported especially among the older age groups and in males.

Figure 1: Uptake by age, gender and invitation type in Round Three

Figure 2 shows uptake of initial participants in Round Two and Round Three. Among both genders and across age-groups, uptake has fallen between Round Two and Round Three. Low uptake is a challenge for the programme and initiatives to improve uptake are being explored. Lower initial uptake may also be partly due to the dilution effect of eligible participants who persistently don't attend but who continue to be invited for their first (initial) screening appointment.

Figure 2: Initial participants – uptake by age, gender and round

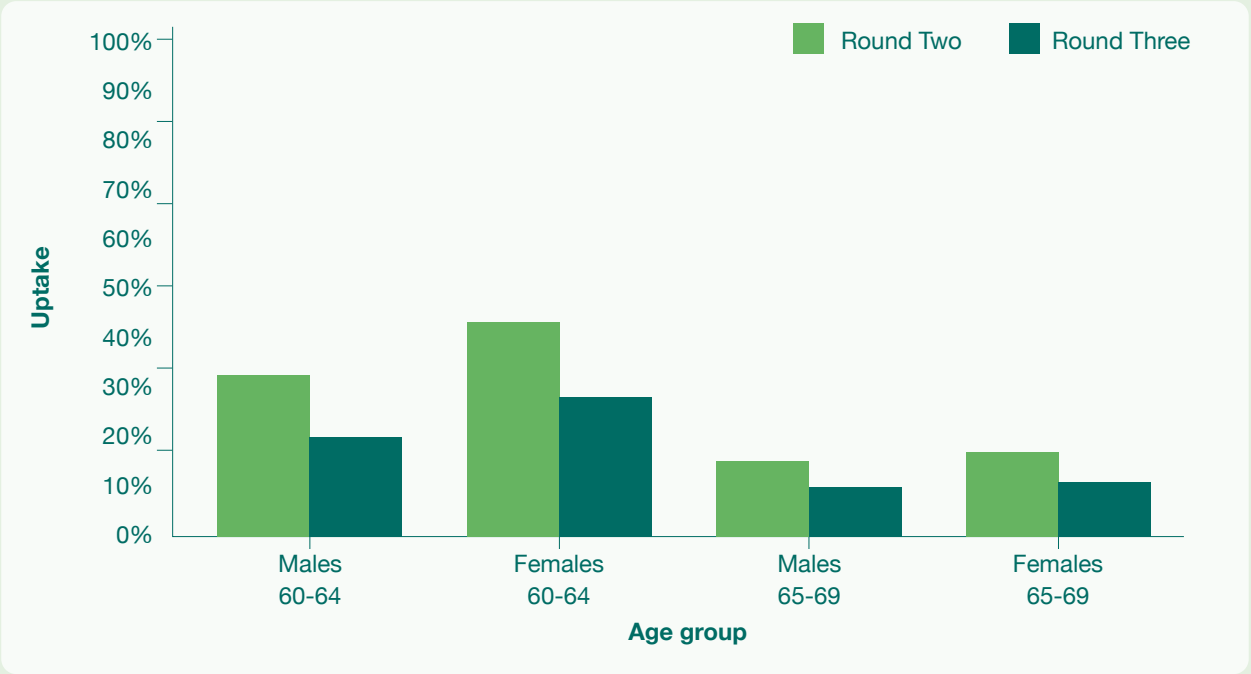


Figure 3 shows uptake of subsequent participants in Round Two and Round Three. Overall subsequent uptake is 2.4% higher in Round Three compared to Round Two. Uptake among both genders and across age-groups increased in Round Three and remains high.

Figure 3: Subsequent participants – uptake by age, gender and round

Programme coverage

Coverage by invitation

BowelScreen aims to invite all eligible people aged 60-69 for screening every two years. To that end, a quality standard 'coverage by invitation' measures the proportion of the eligible population on the bowel screening register that has been invited in the previous two years. This figure for the two-year period ending 31 December 2019 was 100 per cent, which means the programme standard was achieved, and that all people on the register were invited in the round. This indicates the effectiveness of BowelScreen in reaching the target population.

Screening outcomes

As its primary screening tool, the programme uses the FIT, which looks for a level of blood in the stool sample provided. This blood is often not visible to the human eye. If a level of blood is detected (a FIT positive result), a colonoscopy is offered in one of the programme's contracted endoscopy centres

The results of FIT testing for initial participants invited during 2018 and 2019 are shown in Table 4. The number of people participating in the programme for the first time reduced in Round Three. This is to be expected as the programme matures and most newly invited people are in the 60-62 year age range. Older attendees are mainly subsequent participants who are re-attending for the second or third time. In the reporting period, for participants who had their initial or first screen, the FIT positive rate was 3.7 per cent, which is marginally lower than in Round Two. The positivity rate was higher among males than females, with older males having a rate of 5.8 per cent.

Of the 69,844 FIT kits examined, a small number (138) were unsatisfactory and these individuals were offered a repeat test. The unsatisfactory FIT rate as a percentage of the number returned was slightly higher in Round Three, but remains low.

Table 4: BowelScreen screening outcome: Initial screen by age group and gender in Rounds Three, Two and One

Performance Parameter	Male 60-64	Male 65-69	Female 60-64	Female 65-69	Overall Round Three	Overall Round Two	Overall Round One
Number of satisfactory FIT returns	26,351	5,577	32,222	5,338	69,844	132,405	196,238
Satisfactory FIT per number returned	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%	99.9%
Number of unsatisfactory FIT	51	14	60	13	138	175	202
Unsatisfactory FIT per number returned	0.2%	0.2%	0.2%	0.2%	0.2%	0.13%	0.10%
Number of FIT positive	1,122	323	855	241	2,559	5,006	9786
FIT positive rate of satisfactory tests	4.3%	5.8%	2.7%	4.5%	3.7%	3.8%	5.0%
Number of FIT negative	25,229	5,254	31,367	5,097	67,285	127,399	186,452
FIT negative rate of satisfactory tests	95.7%	94.2%	97.4%	95.5%	96.3%	96.2%	95.0%

The results of FIT testing for subsequent participants invited during Round Three are shown in Table 5. The number of people subsequently participating increased from 93,969 in Round Two to 154,318 in Round Three an increase of 64%. This is to be expected as the programme matures, and is an indication of the programme's success whereby people once engaged are remaining with the programme. In Round Three among participants who had their second or subsequent screen the FIT positive rate was 3.1 per cent. In all age groups the FIT positive rate was higher for males than females. The positivity rate was highest among males aged 65-69.

Of the 154,318 FIT kits examined among subsequent participants, a small number of returned FIT kits (471) were unsatisfactory and these individuals were offered a repeat test.

Table 5: BowelScreen screening outcome: Subsequent screen by age group and gender in Round Three and Round Two

Performance Parameter	Male 60-64	Male 65-69	Female 60-64	Female 65-69	Overall Round Three	Overall Round Two
Number of satisfactory FIT returns	30,100	39,629	38,256	46,163	154,318	93,969
Satisfactory FIT per number returned	99.7%	99.6%	99.7%	99.7%	99.7%	99.9%
Number of unsatisfactory FIT	87	148	100	136	471	122
Unsatisfactory FIT per number returned	0.3%	0.4%	0.3%	0.3%	0.3%	0.1%
Number of FIT positive	1,056	1,671	884	1,218	4,838	3,198
FIT positive rate of satisfactory tests	3.5%	4.2%	2.3%	2.6%	3.1%	3.4%
Number of FIT negative	29,044	37,958	37,372	44,809	149,480	90,771
FIT negative rate of satisfactory tests	96.5%	95.8%	97.7%	97.4%	96.9%	96.6%

Colonoscopy

Colonoscopy is the procedure used to assess the colon and rectum following a positive FIT result. It enables examination, biopsy and subsequent histopathological diagnosis of abnormalities in the bowel, as well as identification and endoscopic removal of polyps and adenomas.

People who receive a positive FIT result are contacted by a dedicated nurse from a BowelScreen-contracted endoscopy centre for a pre-assessment in order to establish their suitability for colonoscopy. This pre-assessment includes a telephone interview enquiring about their general health, any co-morbidities, and any medication they may be taking. This colonoscopy is known as an index colonoscopy.

Almost 80 per cent of participants who had a positive FIT underwent index colonoscopy at a BowelScreen contracted endoscopy centre (Table 6). This is below the QA standard of 85 per cent. However, taking just those participants who had a positive FIT and were deemed suitable for colonoscopy almost 95 per cent accepted and underwent an index colonoscopy.

The reason why participants with positive FIT results decline colonoscopy is currently unknown. The programme has begun capturing this information to support service development and delivery. This information will be available for future rounds.

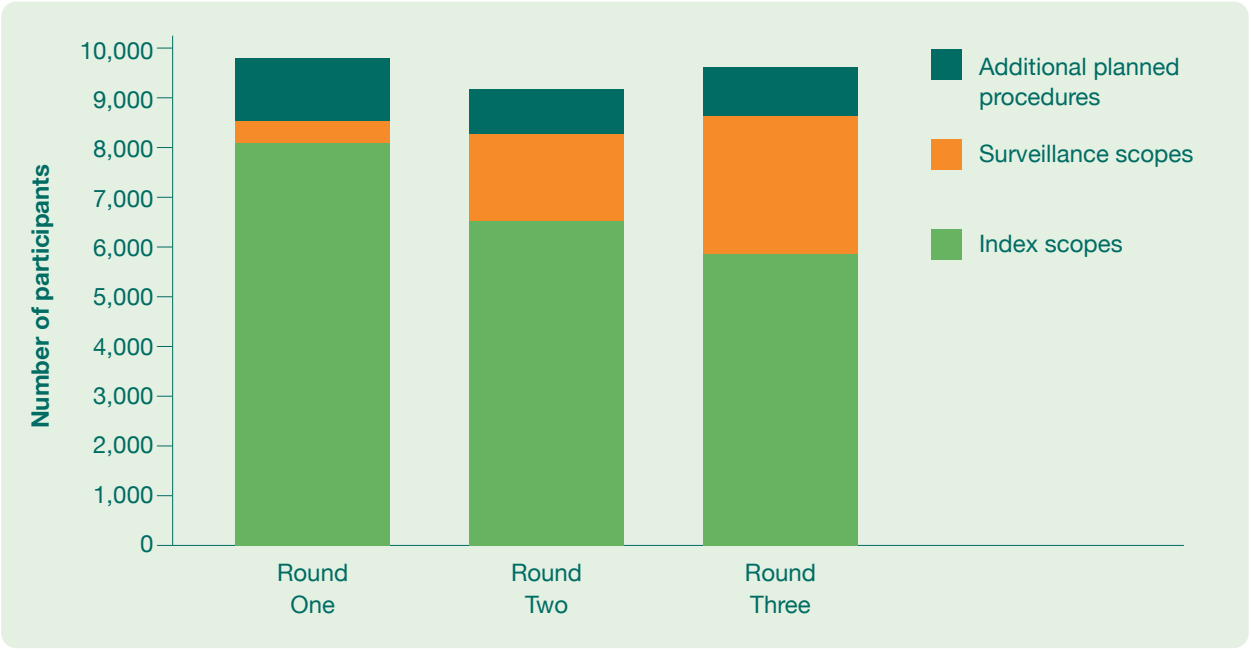
In addition to index colonoscopy the programme also carries out surveillance colonoscopy on participants who had a previous programme colonoscopy where the outcome was determined to be intermediate-risk or high-risk. Intermediate-risk participants are recalled for a surveillance colonoscopy after three years and high-risk are recalled after one year. Surveillance colonoscopies comprise a large proportion of the programme's endoscopy capacity, with the numbers increasing as the programme matures. Numbers of surveillance colonoscopies have increased since the programme began and are shown in Table 6 and Figure 4.

Additional planned colonoscopies are part of any screening programme. An additional endoscopic procedure may be deemed clinically necessary for many reasons. These include; the first colonoscopy may be incomplete because of poor bowel preparation, patient tolerance to the first procedure, necessary to have a second colonoscopy to site-check, or a clinical decision to perform colonoscopy over two visits instead of surgery.

Table 6: BowelScreen participant colonoscopy referrals Rounds Two and Three

Performance Parameter	Round Three	Round Two	QA Standard
Number of participants referred for index colonoscopy	7,397	8,204	
Number of participants who completed pre-assessment	6,295	7,067	
Number deemed suitable for index colonoscopy	6,159	6,906	
Number attending index colonoscopy	5,826	6,523	
Acceptance rate based on positive FIT	78.8%	79.5%	>85%
Acceptance rate for colonoscopy based participants deemed suitable	94.6%	94.5%	
No. participants who attended for a surveillance colonoscopy	2,817	1,702	
No. additional planned procedures performed	742	783	

Figure 4: Number of index, surveillance scopes and additional planned procedures undertaken by BowelScreen by screening round



Colonoscopy waiting times

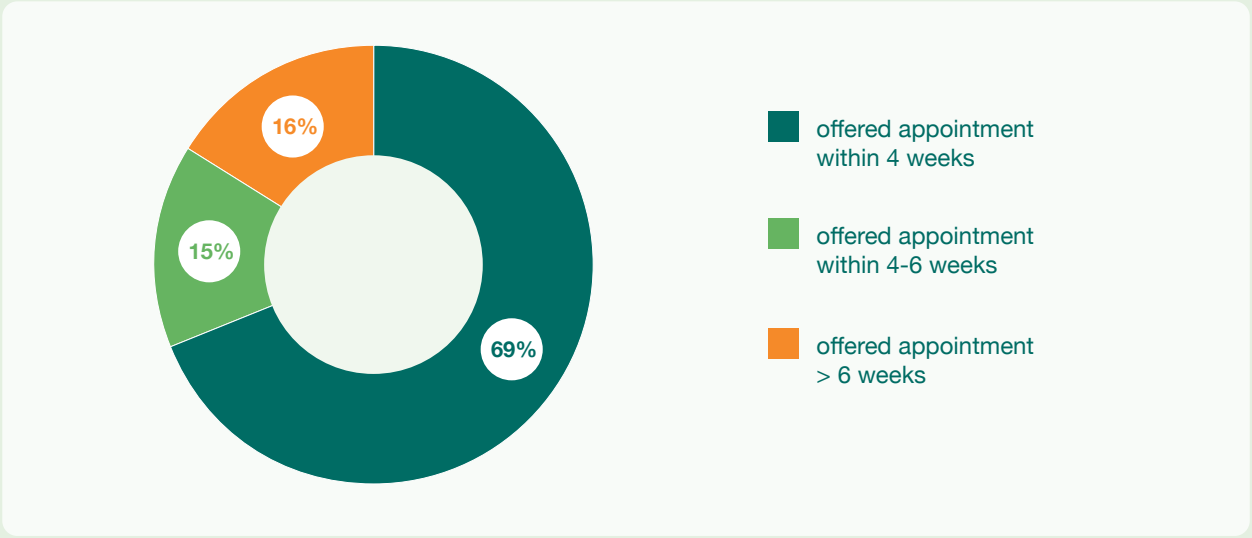
The BowelScreen programme QA standard requires that an index colonoscopy will be offered within four weeks in over 90 per cent of suitable cases. This is to reduce unnecessary anxiety to screening participants, and to facilitate timely investigation of positive screening results.

Providing access to colonoscopy services in a timely manner depends on many factors including demand for colonoscopy services (symptomatic and BowelScreen), capacity and waiting list management protocols.

Waiting times posed a challenge to the programme during the third round of screening. The proportion of participants from Round Three who were offered an index colonoscopy appointment within four weeks was 69 per cent, an improvement from Round Two (47%) although below the programme target of over 90 per cent (Figure 5). A further 15 per cent were offered an appointment within four to six weeks and 16 per cent of participants had to wait longer than six weeks for an appointment.

Nationally, colonoscopy capacity is constrained by the short supply of endoscopists with an appropriate level of skill. Pressures on symptomatic services may have an impact on waiting times for participants referred from BowelScreen as the programme operates within the general symptomatic service. While many of these issues are outside of the programme's control, continued efforts have been made to gain improvements in these waiting times, and ensure that BowelScreen patients are treated as urgent symptomatic. This is supported by Memorandum of Understanding agreements with providers. The programme continues to work with current and potential providers to increase capacity, and is seeking new endoscopy units to participate in the programme.

Figure 5: Waiting times for index colonoscopy; Round Three



Colonoscopy Performance

Effective bowel preparation is crucial to carrying out a colonoscopy as it supports improved detection of adenomas and/or polyps, as well as caecal intubation. Poor bowel preparation is associated with failure to reach the caecum, and hinders the detection of lesions.

In the reporting period over 5,800 people presented for an index colonoscopy at one of BowelScreen's contracted endoscopy centres. Overall, bowel preparation was effectively carried out, colonoscopies could proceed, and completion rates were high. Reported adverse effects were low and well within QA standards. Colonoscopy performance for index scopes is shown in Table 7. There were small increases in some parameters in Round Three, but all results remained within the standard expected.

It is essential that colonoscopy is performed to a high standard and is both safe and comfortable. This is to minimise harm to the screening population and to optimise the patient experience (the patient should be appropriately sedated). Eighty per cent of patients undergoing colonoscopy should have a comfort score of 1 or 2 from the Gloucester Scale.

Table 7: Colonoscopy performance Rounds Two and Three (index colonoscopy only)

Quality Standard	Overall Round Three	Overall Round Two	QA Standard
Bowel cleanliness adequate or excellent	93.6%	94.2%	≥90%
Reported colonic perforation rate (per 1,000 colonoscopies)	0.2	0.8	<1
Reported post-polypectomy perforation rate (per 1,000 colonoscopies)	0.3	1.4	<2
Post-polypectomy bleeding requiring transfusion (PPB)	0.1%	0.11%	<1%
Colonoscopy complete	96.5%	96.3%	
Colonoscopy Comfort Score ≤ 2	85.0%	85.5%	80%

Computed tomography colonography

On some occasions, it is not possible to carry out a colonoscopy on a patient. In these instances, the patient may be referred for a computed tomography (CT) colonography.

Of the 7,397 participants with a positive FIT, 163 were referred for CT colonography; this corresponds to 2.3 per cent of all FIT positive participants, and was within the programme standard of less than 10 per cent. Of those referred for CT colonography all had the procedure performed. Colonography performance is shown in Table 8.

Table 8: BowelScreen participants' computed tomography colonography referrals Rounds One and Two

Quality Standard	Round Three	Round Two	QA Standard
Referral rate of participants to CT colonography following a positive FIT	2.3%	2.5%	≤10%
Number of participants with CT performed	163	204	
Participants with CT colonography performed within 30 days of referral*	77.3%	80.9%	≥95%
Participants with CT colonography complete/adequate	97.6%	99.5%	≥95%
CT colonography reports issued to programme within 15 working days of examination	100%	98.9%	
CT colonography reports issued to programme within 10 working days of examination	99.4%	99.4%	

* *This figure does not necessarily capture individuals offered appointments within the timeframe of 30 days but who deferred their appointment often due to travel distances, personal reasons, etc.*

Histopathological Findings

Cancers detected

During the reporting period, 304 people were diagnosed with bowel cancer. There were 192 colon cancers, 94 rectal cancers and 18 cases of cancer where the site was unconfirmed, giving an overall cancer detection rate of 1.4 per 1,000 participants screened by the FIT (Table 9). This corresponds to a detection rate of 5.2 per cent at colonoscopy.

The cancer detection rate among initial participants overall (1.99 per 1,000 participants screened) was higher than among subsequent participants (1.08 per 1,000 participants screened). This is to be expected because subsequent participants have been screened within the previous two years, and it is expected that abnormalities might have been found and removed in the previous round of screening.

Of those cancers diagnosed and treated by BowelScreen where the stage was known to the Programme, over 58 per cent were stage I or II. This indicates that they were detected at an early stage where successful treatment could be expected (Table 9).

The adenoma detection rate has reduced from 57 per cent in Round Two to 55 per cent in Round Three, both of which are within the standard of 45 per cent. In addition, in Round Three, 451 screening participants had adenomas which were multiple or large adenomas, termed advanced adenomas (AA), compared to 584 in Round Two. These reductions may be explained by the large proportion of subsequent participants who may have had an abnormality e.g. a polyp detected and removed in a previous screening round, or at a surveillance scope. These AAs are considered high risk for progression to bowel cancer.

Histopathology outcomes during the second screening round are detailed in Table 9.

Table 9: Histopathology outcomes for the BowelScreen programme in Rounds Three and Two

Performance Parameter	First screen	Subsequent screen	Overall Round Three	Overall Round Two	QA Standard
Number of cancers	138	166	304	410	
Cancer detection rate per 1,000 participants screened	1.99	1.08	1.36	1.81	
% Stage I and II *	53.6%	63.2%	58.9%	59.9%	
Adenoma detection rate	57.9%	53.7%	55.1%	56.7%	>45%
Number of participants with adenomas	1,163	2,050	3,213	3,700	
Number of adenomas removed	3,229	5,387	8,616	12,367	
Number of participants with advanced adenomas removed	178	273	451	584	
Adenomas with high grade dysplasia	6.0%	4.1%	4.8%	5.1%	<10%
Sessile serrated lesions (SSL)	379	561	940	879	
SSL with high-grade dysplasia	0.3%	0.4%	0.3%	0.6%	

**This excludes cases that were diagnosed by BowelScreen but went elsewhere for treatment*

Cancer detection rate

The cancer detection rate among male participants was higher than for female participants in Round Three. This pattern was also observed in the first and second rounds of screening[5,6] and it reflects gender-incidence statistics from the National Cancer Registry of Ireland[1]. There was a significant reduction in the cancer detection rate for both males and females in Round Three compared to Round One and Round Two (Figure 6).

Figure 6: Cancer detection rate (per 1,000 screened) by gender and screening round

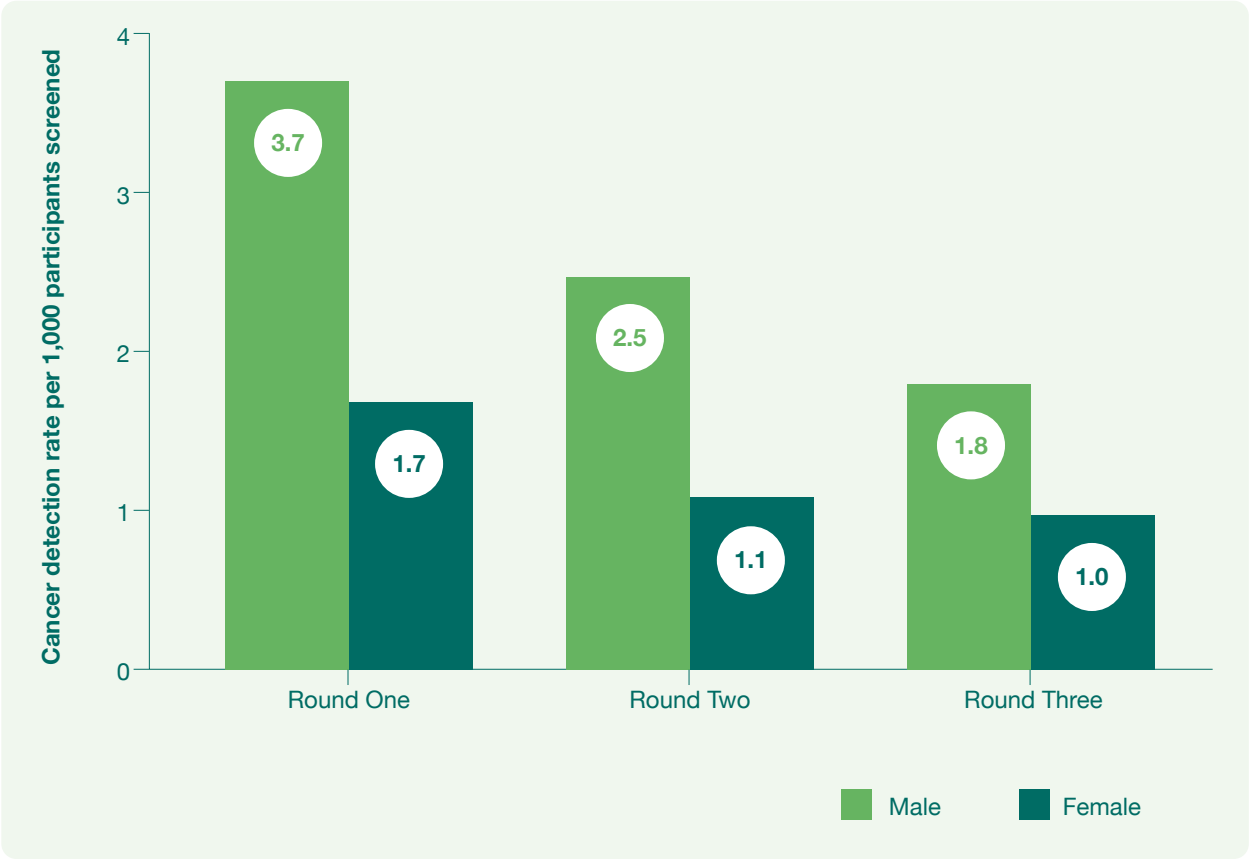
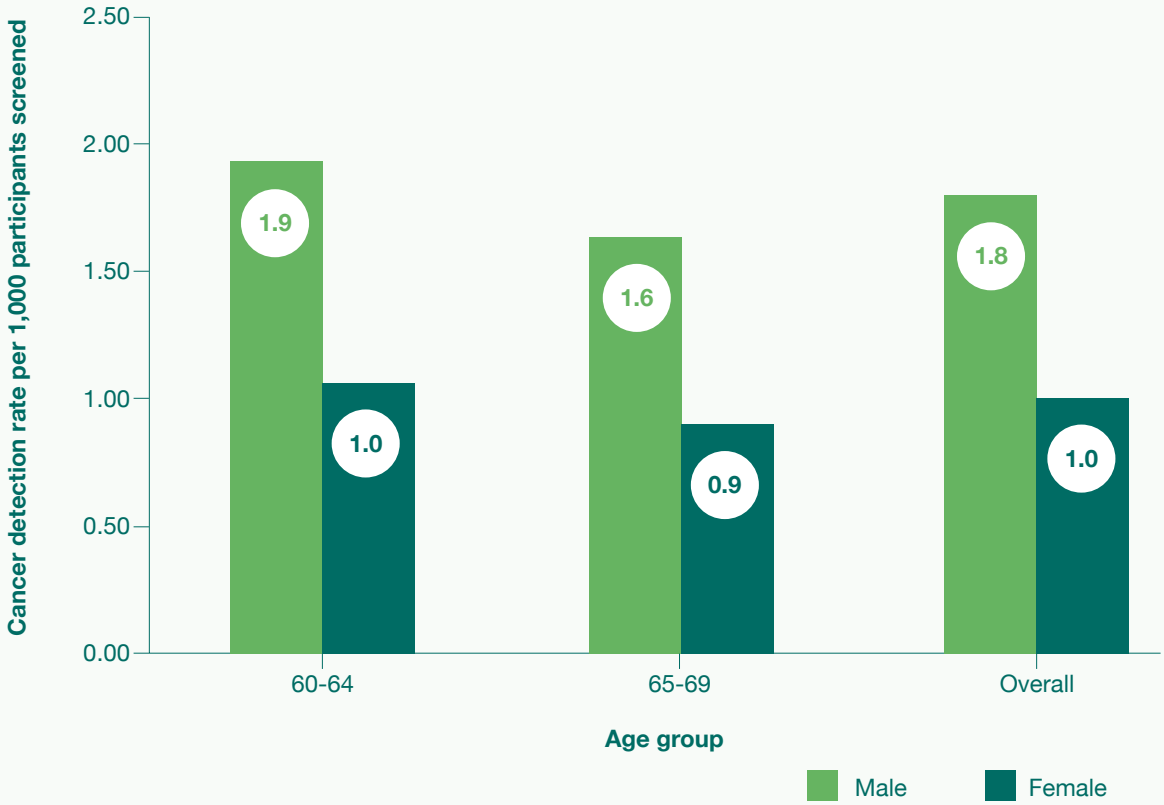


Figure 7 shows the cancer detection rate (per 1,000 participants screened) by gender and age group. The cancer detection rate among males in all age groups was higher than in females. The cancer detection rate among both males and females has decreased with age.

Figure 7: Cancer detection rate (per 1,000 screened) by gender and age group



Adenoma detection

Over 8,600 adenomas or polyps were removed during the reporting period. These are abnormal tissue growths that can become cancerous at a later stage. The removal of pre-cancerous adenomas greatly reduces the risks associated with future bowel cancer development. Adenomas with the most risk associated with bowel cancer are known as advanced adenomas (AAs). Advanced adenomas are defined as the finding of five or more small adenomas in the large bowel or one or more adenomas equal to or greater than 2cm.

BowelScreen Charter Indicators

BowelScreen has a charter of programme commitments to our participants that outlines the service that they can expect from the programme. In addition, BowelScreen has developed standards to ensure that timelines are reasonable to minimise waiting times and possible anxiety for participants. Table 10 outlines how the programme performed against these standards in Round Three.

The proportion of repeat FIT test kits dispatched to participants was below the programme standard, the programme is working on a quality improvement plan to address this. Additionally people with no pathology taken at colonoscopy, with result as routine recall, fell outside the target. This is likely due to variance in practice across screening units. The programme is working to address this.

The programme aimed for, and has achieved, its target in numbers invited to participate, timely dispatch of FIT kits, analysis of kits returned, and reporting to participants their results. In general, timelines for dispatch of FIT and receipt of results were very well adhered to.

Table 10: BowelScreen charter results for Round Three

Quality Standard	Round Three	QA Standard
Participants invited (who do not decline or are not excluded), who do not consent to screening within 8 weeks who are sent one reminder	100%	≥95%
FIT test kits and instructions dispatched within 5 working days to people above who requested them	100%	≥95%
Participants who are sent a reminder (where it is possible to do so) if FIT test kit is not received at laboratory within 4 weeks	99.4%	≥95%
Repeat FIT test kits dispatched to participants who were contactable and satisfied for a replacement to be sent within 10 working days following receipt of unacceptable kit by laboratory (QS 2.14)	91.9%	≥95%
FIT results where file sent to NSS within 5 working days	100%	≥95%
FIT results where file sent to participants within 5 working days	99.3%	≥95%
FIT results where file sent to GP within 5 working days	99.3%	≥95%
Positive FIT appearing on preassessment list of Screening Colonoscopy unit within 7 working days of result received by NSS	99.9%	≥95%
Participants with no pathology taken as part of colonoscopy and result classified as routine recall where file dispatched to mail provider within 10 working days	80.7%	≥95%
Participants with a routine recall colonoscopy result where file sent to mail provider (for circulation to GP) within 10 working days	99.7%	≥95%
Participants with a surveillance colonoscopy result where file sent to mail provider within 10 working days	99.8%	≥95%
People who received first ever invitation where invited within 24 months of becoming known to the programme or becoming eligible	98.9%	≥95%
Participants re-invited within 24 months of becoming due for re-invite	99.6%	≥95%

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