BowelScreen
An Clár Náisiúnta Scagthástála Putóige
The National Bowel Screening Programme

Programme Statistical Bulletin

2016 - 2017

Contents

Programme Performance

Screening activity overall

The figures reported relate to clients invited by BowelScreen for screening between 1 January and 31 December 2016. Some of these clients may have been screened or treated in 2016 and/or early 2017.

Programme standards, against which performance is measured, are based on the 'Guidelines for Quality Assurance in Colorectal Screening' (2nd edition)[1].

During 2016, 280,290 clients were invited by BowelScreen for screening (Table 1). Of these, 117,426 consented to screening and 111,609 completed and returned a satisfactory FIT test. This reflects a screening uptake rate based on the eligible population of 39.8 per cent, which is below the standard of 50 per cent. BowelScreen can only be effective in achieving its goal of reducing the number of mortalities from bowel cancer in the population if at least 50 per cent of eligible clients attend for screening. Adenomas were detected in 1,843 clients undergoing colonoscopy giving an adenoma detection rate (ADR) of 55.9 per cent which is well above the programme standard. As most bowel cancers develop from adenomas, their removal at colonoscopy provides a preventative measure that lowers the risk of the development of future bowel cancers.

Table 1: BowelScreen screening performance 2016-2017

Performance Parameter	Total	QA Standard
Number of (eligible) clients invited	280,290	
Number of clients consented	117,426	
Number of FIT returns	111,741	
% FIT returns by consent	95.2	
Number of FIT satisfactory	111,609	
% Uptake	39.8	≥50%
Number of FIT positive	4,110	
% FIT positive	3.7	
No. cancers	197	
Cancer Detection Rate (CDR) per 1,000 screened	1.77	
No. clients with adenomas	1,843	
Adenoma Detection Rate (ADR)	55.9%	>45%

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

Uptake by type of screen, gender and age-group

In 2016 BowelScreen began the second round of screening. The statistics presented in this report pertain to those clients who received their invitation in round two between 1 January and 31 December 2016. Invited clients can be either *initial or subsequent*. The term initial refers to clients who were invited for their first screen during this round, having only become eligible or known to the programme. It also comprises of clients who were invited in round 1 but failed to take up the offer of screening. Subsequent refers to clients who attended in round 1 and were re-invited for their second or subsequent screen in round 2.

Uptake of initial clients was higher in the younger age-group in both males and females (Table 2). The uptake among initial females was higher than the uptake among initial males across both age-groups. Most of the clients in the older age-group were invited in round one but did not take up their screening opportunity. Evidence from other screening programmes has shown that this behavior often persists over time and that these clients are less likely to attend in the next round.

Table 2: Initial invites by gender and age-group

Performance parameter	Male		Female	
	60-64	65-69*	60-64	65-69*
No. eligible invited	101,190	28,616	93,513	23,777
No. screened	33,866	4,523	41,087	4,087
Uptake (%)	33.5	15.8	43.9	17.2

Includes some clients who were over 70 years old at time of screening

Uptake was high among subsequent clients among both males and females (Table 3). The highest uptake was observed among subsequent females aged 60-64, however due to the small numbers in this category, the uptake figure is somewhat unreliable.

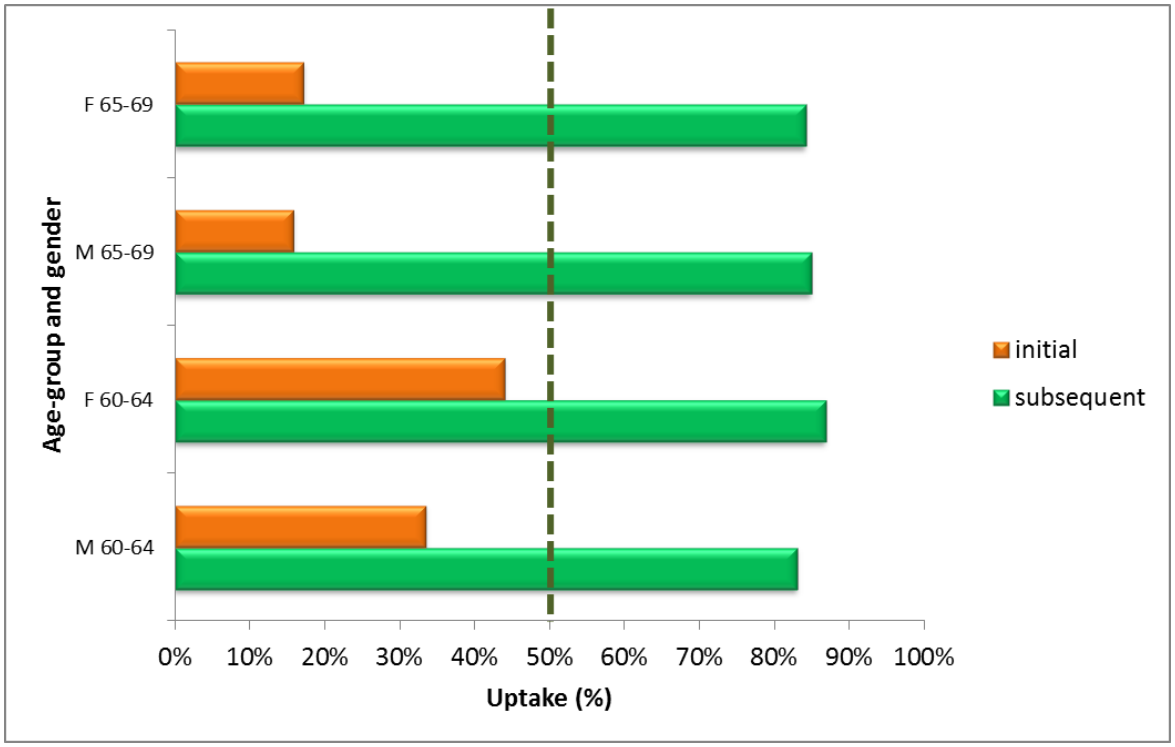
Table 3: Subsequent invites by gender and age-group

Performance parameter	Male		Female	
	60-64	65-69*	60-64	65-69*
No. eligible invited	377	14,921	446	17,450
No. screened	313	12,662	387	14,684
Uptake (%)	83.0	84.9	86.8	84.9

Includes a small number of clients who were over 70 years old at time of screening

Uptake by age, gender and type of invitation (initial or subsequent) is shown in Figure 1. This clearly demonstrates that subsequent clients are returning to the programme in high numbers. This is an indication that that these clients find the test acceptable and are happy with the service they received in the first round of screening. The uptake rate among initial clients remains a challenge, with low uptake reported especially among the older age-groups.

Figure 1: Uptake by age, gender and invitation type 2016-2017



Programme Coverage

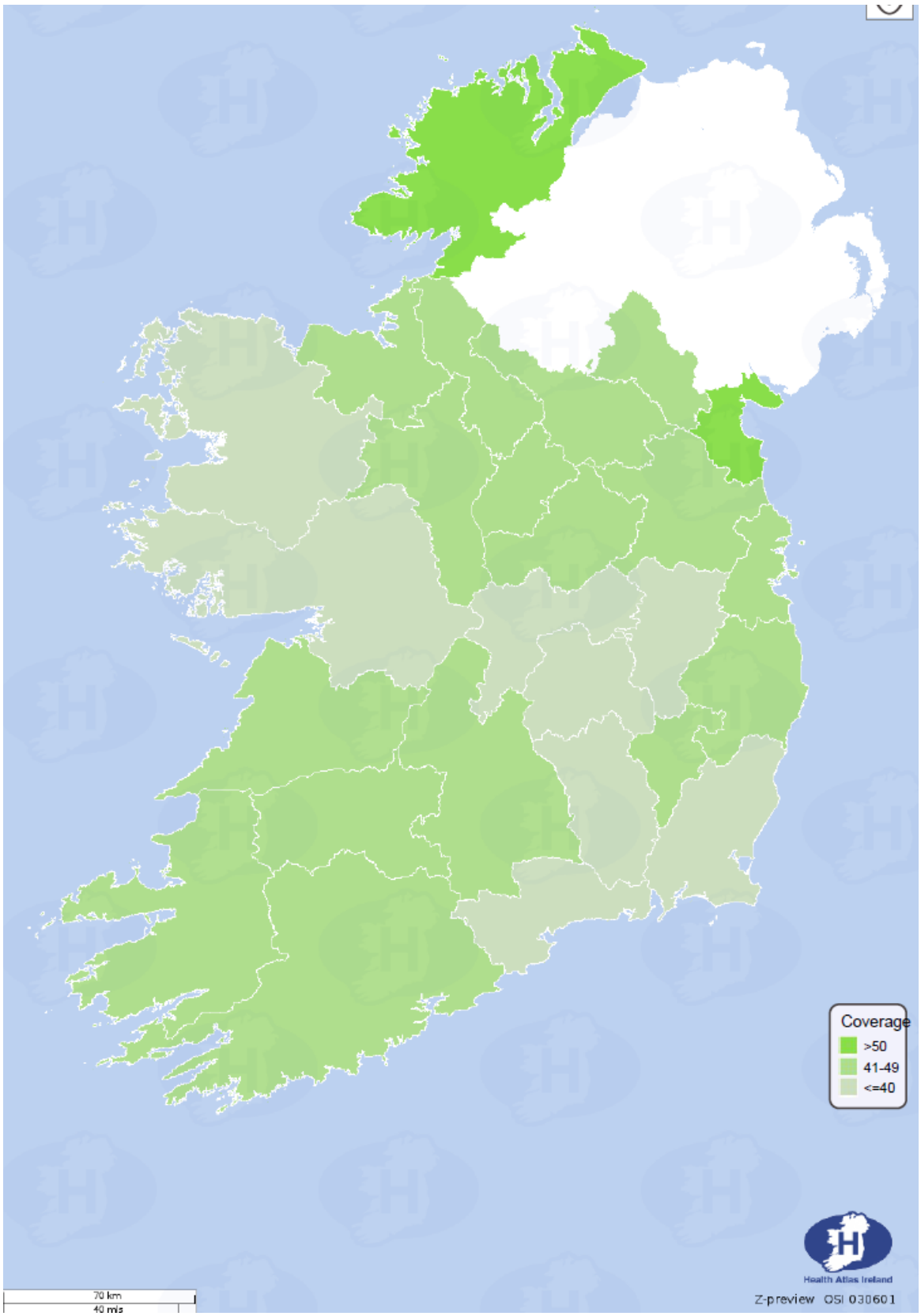
Coverage by Invitation

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 population on the bowel screening register that have been invited in the previous two years. This figure for the two-year period ending 31 December 2016 is 100%, achieving the programme standard and meaning that all clients on the register were invited in the round. This indicates the effectiveness of BowelScreen in reaching the target population.

Coverage by Screening

Coverage by screening is also a quality standard for the programme and is a measure of the proportion of the target population (based on national census figures 2016) screened or who actually underwent the test, within a period. Coverage by screening is measured over a two-year period and the programme standard is >45%. For the two-year period ending 31 December 2016, 43.1% of clients invited undertook the test. An indicative geographical spread of screening coverage by county is shown in Figure 2. Two counties had coverage greater than 50% over the two-year time period.

Figure 2: Coverage (%) based on county of residence recorded on the BowelScreen Register for eligible individuals* screened between 1 January 2015 and 31 December 2016



*****Eligible population based on CSO 2016 figures.*

As its primary screening tool, the programme uses the Faecal Immuonchemical Test (FIT), which looks for a level of blood in the sample provided. If this level of blood is detected (i.e. a FIT positive result), a colonoscopy is offered in one of the programme's contracted endoscopy centres.

The results of FIT testing for initial clients invited during 2016 are shown in Table 4.
In the reporting period, for clients who had their initial or first screen, the FIT positive rate was 3.7 per cent. The positivity rate was higher among males than females, with older males having a rate of over 6 per cent.

Of the 83,670 FIT kits examined, a small number (107) were unsatisfactory and these individuals were offered a repeat test.

Table 4: BowelScreen Screening outcome: Initial screen by age-group

	Male 60-64	Male 65-69*	Female 60-64	Female 65-69*	Overall
Number of satisfactory FIT returns	33,866	4,523	41,087	4,087	83,563
% Satisfactory FIT by number returned	99.9	99.9	99.9	99.6	99.9
Number of unsatisfactory FIT	35	6	48	18	107
% Unsatisfactory FIT by number returned	0.0	0.0	0.1	0.0	0.0
Number of FIT positive	1,539	275	1,078	199	3,091
% FIT positive of satisfactory	4.5	6.1	2.6	4.9	3.7
Number of FIT negative	32,327	4,248	40,009	3,888	80,472
% FIT negative	95.5	93.9	97.4	95.1	96.3

Includes a small number of clients who were over 70 years old at time of screening

The results of FIT testing for subsequent clients invited during 2016 are shown in Table 5. In 2016-2017 among clients who had their second or subsequent screen the FIT positive rate was 3.6 per cent. In the older age groups the FIT positive rate was higher for males than females. The positivity rate was highest among males aged 65-69.

Of the 28,071 FIT kits examined among subsequent clients, a very small number of returned FIT kits (25) were unsatisfactory and these individuals were offered a repeat test.

Table 5: BowelScreen Screening outcome: Subsequent screen by age-group

	Male 60-64	Male 65-69*	Female 60-64	Female 65-69*	Overall
Number of satisfactory FIT returns	313	12,662	387	14,684	28,046
% Satisfactory FIT by number returned	100.0	99.9	100.0	99.9	99.9
Number of unsatisfactory FIT	0	10	0	15	25
% Unsatisfactory FIT by number returned	0.0	0.1	0.0	0.1	0.1
Number of FIT positive	11	579	17	412	1,019
% FIT positive of satisfactory	3.5	4.6	4.4	2.8	3.6
Number of FIT negative	302	12,083	370	14,272	27,027
% FIT negative	96.5	95.4	95.6	97.2	96.4

Includes a small number of clients who were over 70 years old at time of screening

Colonoscopy

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

Clients 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.

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

Table 6: BowelScreen client colonoscopy referrals

	Overall	QA Standard
Number of clients referred for colonoscopy	4,110	
Number of clients who completed pre-assessment	3,530	
Number deemed suitable for colonoscopy	3,487	
Number attending colonoscopy	3,297	
% Acceptance rate based on positive FIT	80.2	>85%
% Acceptance rate for colonoscopy based clients deemed suitable	94.6	

Colonoscopy waiting times

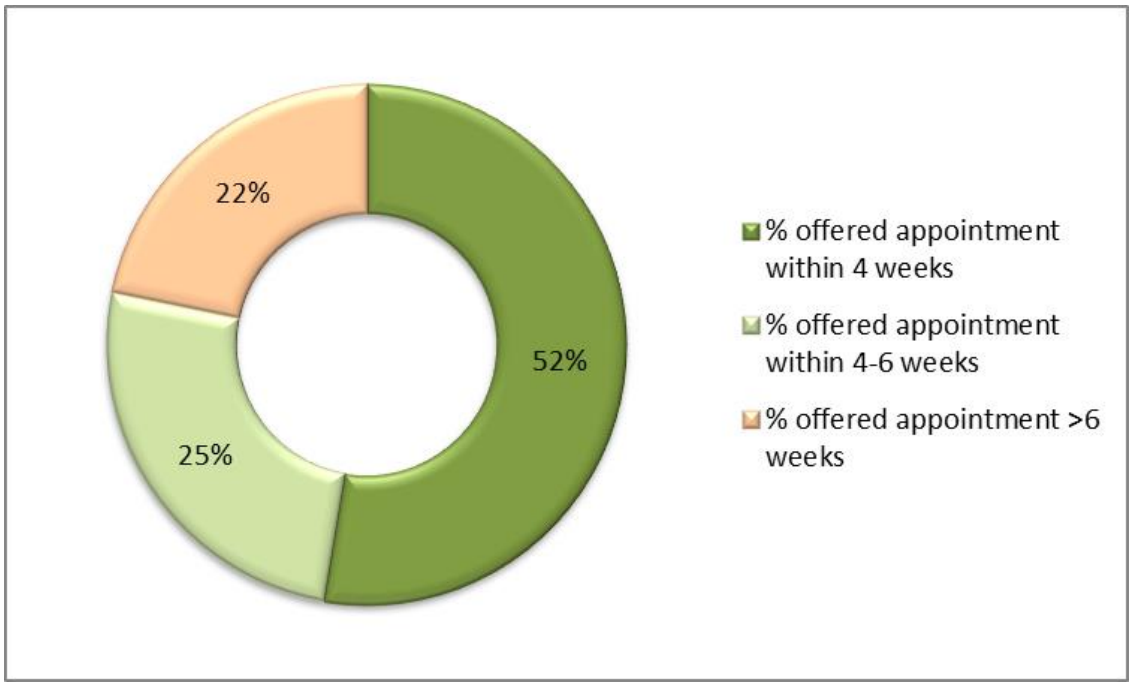
In order to reduce unnecessary anxiety to screening participants and to facilitate timely investigation of positive (abnormal) screening results, the BowelScreen programme standard is that in over 90 per cent of cases, a colonoscopy will be offered within four weeks of pre-assessment confirming suitability for colonoscopy.

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

Waiting times posed a challenge to the programme over the first round of screening and this has continued into the second round. The percentage of clients from 2016/17 who were offered a colonoscopy appointment within four weeks was 52 per cent, compared to the programme target of over 90 per cent (Figure 3). A further 25 per cent were offered an appointment within four to six weeks and over 22 per cent of clients had to wait more than six weeks for an appointment.

Nationally, colonoscopy capacity is an issue across the system with the availability of endoscopists with an appropriate level of skill in short supply. Such pressures on symptomatic services can have an impact on waiting times for clients referred from BowelScreen. 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, supported by Memorandum of Understandings with providers.

Figure 3: Colonoscopy waiting times 2016-2017



Bowel preparation

Effective bowel preparation is crucial to carrying out a colonoscopy as it supports improved detection of adenomas 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 almost 3,300 clients presented for a colonoscopy at one of BowelScreen's 14 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 standards. Colonoscopy performance is shown in Table 7.

Table 7: Colonoscopy performance

	First screen	Subsequent screen	Overall	QA Standard
% Bowel cleanliness adequate or excellent	92.9	95.4	93.5	≥90%
Reported colonic perforation rate (per 1,000 colonoscopies)	0.4	0.0	0.3	<1 per 1000 colonoscopies
Reported post-polypectomy perforation rate (per 1,000 colonoscopies)	1.2	2.4	1.5	<2 per 1000 colonoscopies with polypectomy
% Post-polypectomy bleeding requiring transfusion (PPB)	0.1	0.0	0.1	<1%
% With colonoscopy complete	96.3	95.9	96.2	

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 4,110 clients with a positive FIT, 108 clients were referred for CT colonography; this corresponds to 2.6 per cent of all FIT positive clients. This is within the programme standard of less than 10 per cent.

Of those referred for CT colonography 111 had the procedure performed.
Colonography performance is shown in Table 8.

Table 8: BowelScreen colonography reporting

	Overall	QA Standard
No. clients referred to CT colonography	108	
% Clients referred to CT colonography following a positive FIT	2.6	≤10%
No. clients with CT performed	111	
% Clients with CT colonography performed within 30 days of referral*	82.9	≥95%
% Clients with CT colonography complete/adequate	130.6	≥95%
% CT colonography reports issued to programme within 15 working days of examination**	101.9	
% CT colonography reports issued to programme within 10 working days of examination	100.9	

*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.
**There is a minimum programme standard of ≤15 working days for report turnaround time after CT colonography examination.

Histopathological Findings

Cancers detected

During the reporting period, 197 screening participants were diagnosed with bowel cancer following colonoscopy, resulting in a detection rate of 6 per cent at colonoscopy.

There were 133 colon cancers, 49 rectal cancers and 15 cases of cancer where the site was unconfirmed, giving an overall cancer detection rate of 1.8 per 1,000 clients screened by the FIT.

Over 60 per cent of all cancers which were diagnosed and treated by BowelScreen were stage I or II, meaning that they were detected at an early stage where successful treatment could be expected (Table 9).

The adenoma detection rate was 56% which is well above the standard of 45%. In addition, in 300 of these screening participants their adenomas were multiple or large adenomas, termed advanced adenomas (AA) These AAs are considered high risk for the progression to bowel cancer.

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

Table 9: Histopathology outcomes for the BowelScreen programme in 2016-2017

	First screen	Subsequent screen	Overall	QA Standard
No. cancers	155	42	197	
% Stage I and II *	59.0*	65.0*	60.3*	
Adenoma detection rate (%)	57.9	50.7	55.9	>45%
No. clients with adenomas	1,415	428	1,843	
No. adenomas removed	4,772	1,138	5,910	
No. clients with advanced adenomas	242	64	306	
% adenomas with high grade dysplasia	5.4	4.9	5.3	<10%
Sessile Serrated Lesions (SSL)	363	43	406	
% SSL with high-grade dysplasia	0.3	0.0	0.3	

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

Cancer detection rate

The cancer detection rate (per 1,000 clients screened) among initial clients was higher than subsequent clients (Figure 4). This is to be expected somewhat insofar as subsequent clients have been screened within the last two years and it is expected that abnormalities might have been found in the previous round of screening. Removal of polyps and adenomas greatly reduces the risk of subsequent bowel cancer developing and this may also account for the lower observed cancer detection rate among subsequent clients. The cancer detection rate among males was higher than females for both initial and subsequent clients. This pattern was also observed in the first round of screening[2] and is borne out by statistics from the National Cancer Registry of Ireland[3].

Figure 4: Cancer detection rate (per 1,000 screened) by gender

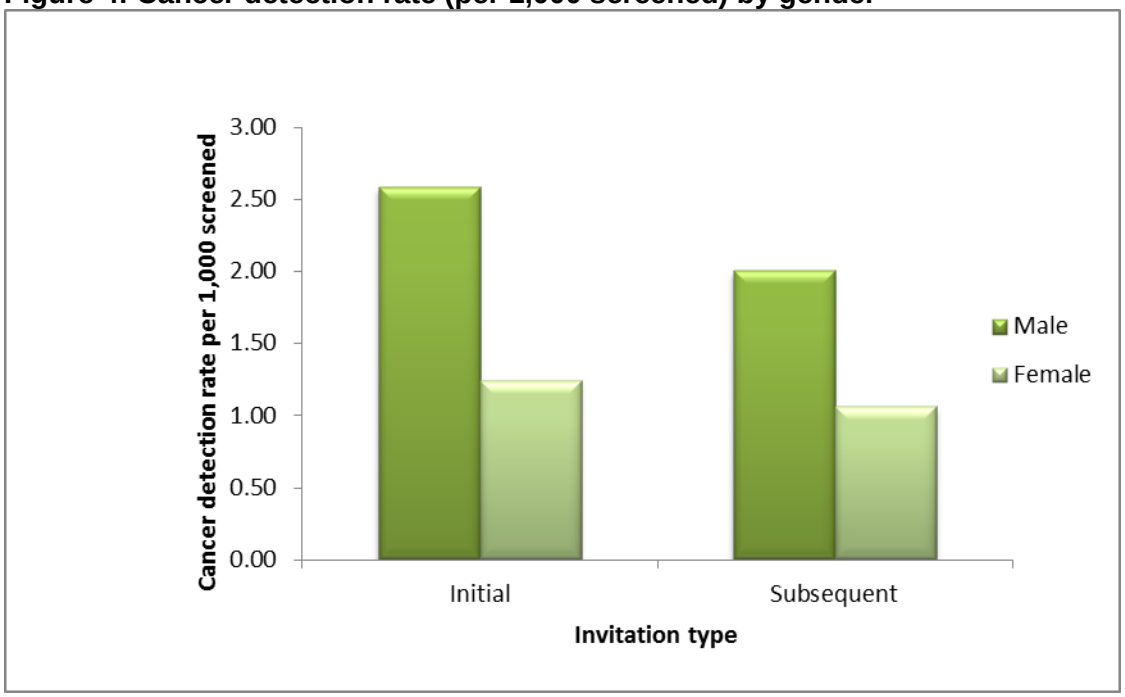
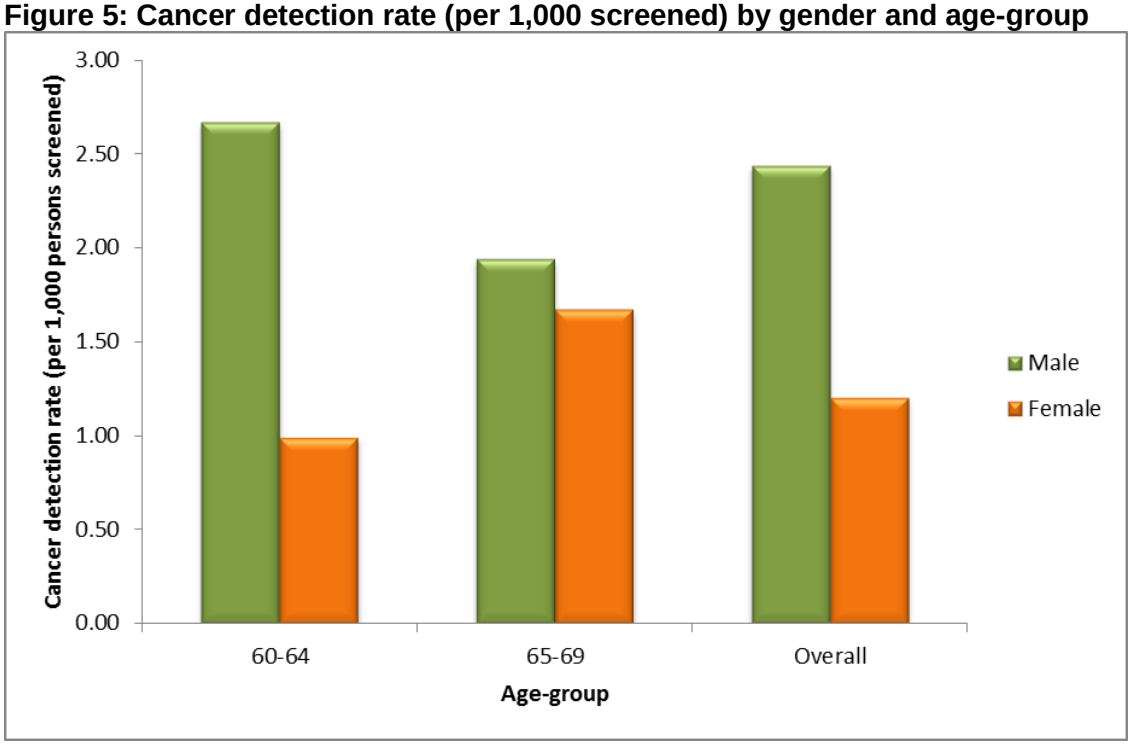


Figure 5 shows the Cancer detection rate (per 1,000 screened) by gender and age-group. Overall the cancer detection rate among males is greater than twice that of females.

The cancer detection rate among females increases with age whereas that of males falls with age.

Figure 5: Cancer detection rate (per 1,000 screened) by gender and age-group



Adenoma detection

Approximately 6,000 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 (AA). 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 2 cm.

The purpose of BowelScreen is not only the detection of early asymptomatic bowel cancers, but also the finding and removal of AA.

During the reporting period, 306 screening participants had AA removed from their bowel, greatly reducing the possibility of subsequent cancer development. These individuals are offered further annual surveillance colonoscopies to detect and treat any adenoma recurrence at a later date.

BowelScreen Charter

BowelScreen has drawn up a charter of programme commitments to our clients. This outlines the service that clients can expect from the programme. In addition BowelScreen has developed standards to ensure that timelines are reasonable in order to minimize waiting times and possible anxiety for clients. Table 10 outlines how BowelScreen performed against these standards in 2016-2017. Four standards for dispatch of FIT and receipt of results were adhered to during 2016-2017. Although 90 per cent of clients were invited to have a screening test within 30 months of becoming known to the programme or becoming eligible for screening, only 71 per cent of clients were invited within two years.

Table 10: BowelScreen Charter Results

	2016	QA Standard
% of FIT test kits and instructions dispatched within 5 working days to clients above who requested them	100.0	≥95%
Satisfactory FIT results where file sent to NSS within 3 working days	100.0	100%
% Satisfactory FIT results where file sent to Mail provider within 5 working days of result received by NSS	98.6	90%
% Satisfactory FIT results where file sent to Mail provider within 24 working days of sample received at lab	100.0	>90%
% with positive FIT sent to Screening Colonoscopy Unit within 7 days of result received by NSS	99.9	100%
% Clients who received first ever invitation where invited within 24 months of becoming known to the programme or becoming eligible	70.9	>90%

References:

1. Guidelines for Quality Assurance in Colorectal Screening, Second Edition. National Screening Service, 2017

2.BowelScreen Programme Report Round One 2012-2015 National Screening Service, 2017. Available online at: https://www.bowelscreen.ie/_fileupload/Programme%20Reports/CR-PR-PM-2%20Rev01%20BowelScreen%20Programme%20Report%20Round%201%202012%20-%202015.pdf

3.National Cancer Registry. Cancer Factsheet Colorectal. Updated May 2017. Available online at: https://www.ncri.ie/sites/ncri/files/factsheets/colorectal.pdf