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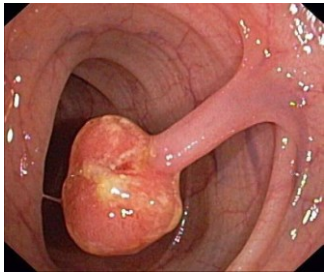
bevolkingsonderzoek
Colorectal cancer



Monitoring

RIVM is responsible for the national coordination of the Dutch Colorectal Cancer Screening Programme. The annual National Monitoring of the Colorectal Cancer Screening Programme is implemented on the instructions of the RIVM by Erasmus MC (Departments of Public Health, Gastroenterology, Pathology and Radiology) and the Dutch Cancer Institute / Antoni van Leeuwenhoek hospital. The monitoring is carried out using data from ColonIS, the national information system for the Colorectal Cancer Screening Programme.

This folder has three sections:

1) A description of the main results of monitoring the participation rates and results of primary screening (iFOBT).
2) A description of the main results of monitoring the participation rates and results of the follow-up diagnostics (colonoscopy).
3) A description of the main results of monitoring various types of coverage and processing times.

TERMINOLOGY

ColonIS = national information system for the Colorectal Cancer Screening Programme

iFOBT = immunological Faecal Occult Blood Test; primary test in the Colorectal Cancer Screening Programme

Unreliable iFOBT test results = iFOBT with a lapsed expiry date or that took longer than seven calendar days to return

Uninterpretable iFOBT = iFOBT that cannot be interpreted by the lab because, for example, the bar code is unreadable or there is too much faeces in the tube

Pre-procedure interview = interview to prepare clients that have received an unfavourable test result, for the colonoscopy

Referral percentage = percentage of participants with an unfavourable test result (test value above the cut-off value)

Positive predictive value = percentage of participants with an unfavourable test result in whom colorectal cancer and/or advanced adenoma is detected

Cut-off value = concentration of haemoglobin in the faeces above which a participant is referred for follow-up diagnostics (unfavourable test result)

Detection rate = number of abnormalities detected during a colonoscopy per 1,000 clients screened with

PART 1. MONITORING THE PARTICIPATION RATE AND RESULTS OF PRIMARY SCREENING

Source data

This section presents the participation rates and results of primary screening (iFOBT) for the first half of 2014 (clients invited up to 30 June 2014) of the Colorectal Cancer Screening Programme, including the preceding pilot study, that was performed in the last quarter of 2013 in the south western region (3,219 invitees). The target population for the Colorectal Cancer Screening Programme is comprised of men and women aged from 55 to 75 who are invited once every two years to be screened using iFOBT. In the case of an unfavourable result, which means a value above the cut-off value, the client is invited for a pre-procedure interview preceding colonoscopy. The screening programme is being implemented in stages, with a planned roll-out period of five years.

1. Invitees

The initial target group for 2014 (including the pilot study) is comprised of 891,294 clients from the birth cohorts of 1938, 1939, 1947, 1949, and 1951. Up until 30 June 2014, a total of 189,610 clients from the target group had been invited. This is 21.3% of the initial target group (table 1). Clients were primarily invited from the oldest birth cohorts; 64% of the invitees were 75 or 76 years old.

Table 1. Initial 2014 target group and invitees up to 30 June 2014 by age (source: ColonIS).

Birth cohort	Initial target group	Invitees	Invitees (%)
1938	122,817	85,451	69.6%
1939	128,456	36,684	28.6%
1947	223,713	21,144	9.5%
1949	209,146	42,884	20.5%
1951	207,162	3,447	1.7%
Total	**891,294**	**189,610**	**21.3%**

2. iFOBT screening participation rates

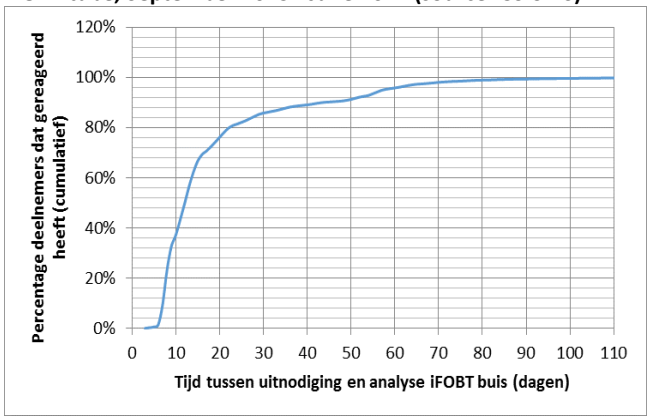
The total participation rate of the screening programme was 68.2% (table 2). The total participation percentage was higher among women than men. The participation percentage was higher among younger participants than older, particularly among the women.

Table 2. The percentage of men and women that participated in the iFOBT screening by age (source: ColonIS).

Birth cohort	Men	Women	Total
1938	65.5%	63.7%	64.5%
1939	68.6%	68.1%	68.3%
1947	72.5%	75.9%	74.2%
1949	70.0%	75.0%	72.5%
1951	66.0%	73.7%	69.7%
Total	**68.0%**	**68.5%**	**68.2%**

Approximately 80 days after dispatching the invitation, 99% of the participants had returned their iFOBT (figure 1). Figure 1 shows the effect of the reminder (42 days after the invitation): the curve dips after 30 days but again increases rapidly after approximately 50 days.

Figure 1. Average response time of clients that returned an iFOBT tube, September 2013 - June 2014 (source: ColonIS).



3. iFOBT results

Of the 129,395 men and women who returned an iFOBT, 2,096 (1.6%) had an initial result that was unreliable or uninterpretable. In 5.4% of the cases, the initial sample that was returned was incomplete (missing form or missing iFOBT tube). After sending a new test set on one or more occasions, 127,680 people (98.7% of the participants and 67.3% of the invitees) had a interpretable iFOBT.

Of these interpretable iFOBT tubes, 12.0% were positive (referral percentage; table 3). The referral percentage was higher among men than women and increased with age.

Table 3. Positive result (referral rate) by birth cohort and gender (source: ColonIS).

Birth cohort	Men	Women	Total
1938	16.9%	11.6%	14.1%
1939	15.2%	11.0%	13.0%
1947	12.5%	8.3%	10.3%
1949	10.6%	7.3%	8.9%
1951	8.9%	5.2%	7.0%
Total	14.3%	9.9%	12.0%

In July 2014, the cut-off value for a positive iFOBT was increased from 88 ng/ml to 275 ng/ml. The number of iFOBTs that were assessed using this increased cut-off value in the current target group (invited up to 30 June 2014) was low (n=4,866 / 127,680) and was therefore not presented separately.

PART 2. MONITORING THE PARTICIPATION RATES AND RESULTS OF THE FOLLOW-UP DIAGNOSTICS

Source data

This section presents the participation rates and results of the follow-up diagnostics (pre-procedure interview and colonoscopy) for the first half of 2014 (clients invited up to 30 June 2014) from the Colorectal Cancer Screening Programme, including the preceding pilot study.

1. Pre-procedure interview participation rates

In total, 15,383 participants had an unfavourable iFOBT result and 15,382 of these received an invitation for a colonoscopy pre-procedure interview. The primary appointment for the pre-procedure interview was moved by 27% of the clients. Of the invitees, 13,220 (85.9%) took part in the pre-procedure interview. In total, 2% had not yet had their scheduled pre-procedure interview, more than 10% cancelled their pre-procedure interview, and 1.5% did not turn up for their pre-procedure interview (no show).

2. Pre-procedure interview conclusion

The follow-up policy of a colonoscopy was recommended to 12,167 (92.0%) of the 13,220 that underwent a pre-procedure interview (table 4). A CT colonography was recommended to 0.9%. Of the participants in the pre-procedure interview, 4.5% were definitively excluded from a colonoscopy.

Table 4. Conclusions from the pre-procedure interviews (source: ColonIS).

Conclusion	Total
Colonoscopy	92.0%
CT colonography	0.9%
Client prefered a different assessment location	0.2%
Colonoscopy postponed	2.3%
Definitive exclusion	4.5%

3. Colonoscopy participation rates

Of the 12,167 people that were recommended to undergo colonoscopy during the pre-procedure interview, a colonoscopy was performed in 11,430 (93.9%) of the cases, according to the availability of colonoscopy and/or pathology reports (table 5). A colonoscopy is currently scheduled or has recently been performed for a further 1.5% of these people, so their status is as yet unknown. No colonoscopy or pathology reports were available for 553 (4.5%) of the clients.

Table 5. Colonoscopy status of clients for which the pre-procedure interview conclusion was 'colonoscopy'

Status	Total
Colonoscopy performed	93.9%
Scheduled or recent	1.5%
Cancelled (3 clients)	0.0%
No information	4.5%

4. Colonoscopy results

During the colonoscopy, colorectal cancer was detected in 763 (7.3%) of the clients (Positive Predictive Value (PPV) of iFOBT for colorectal cancer is 7.3%) and advanced adenoma in 3,832 (33.5%) of the clients (table 6). A serrated polyp or serrated adenoma was detected in a further 544 (4.8%) clients.

Table 6. Percentage of colonoscopies resulted in referral for most advanced diagnosis (source: ColonIS).

Colonoscopy yield	Total
Colorectal cancer	7.3%*
Advanced adenoma	33.5%
Non-advanced adenoma	23.1%
Serrated polyp/adenoma	4.8%
No abnormalities	31.9%
Other tumours (2 clients)	0.0%

**The percentage of clients with colorectal cancer is based on the final conclusion of the colonoscopy reports (n=10,443) . The assessment for other abnormalities was based on the endoscopy results and pathology reports for all clients of whom information was available (n=11,430).*

At the time of the analysis, a colonoscopy had been performed in 108 of the clients after an unfavourable iFOBT result, analysed using the increased cut-off value. These numbers are too low to be presented separately.

In an international context, carcinomas and advanced adenomas are considered relevant abnormalities (together 40.8%). No adenomatous abnormalities were detected in 31.9% of the colonoscopies and a non-advanced adenoma or a serrated adenoma/polyp was detected in the other 27.9%, which in a number of cases resulted in a recommendation for surveillance.

5. Screening programme detection rates

An advanced adenoma or colorectal cancer was detected in 4,595 (3.6%) of the 129,395 participants. This corresponds with a detection rate of 35.5 per 1,000 screened clients (table 7).

Table 7. Total colonoscopy yield per diagnosis per 1,000 screened clients (detection rate; source: ColonIS).

Colonoscopy yield	Detection rate
Colorectal cancer	5.9
Advanced adenoma	29.6
Non-advanced adenoma	20.4
Serrated polyp/adenoma	4.2
No abnormalities	28.2
Other tumours (2 clients)	0.0

PART 3. MONITORING COVERAGE AND PROCESSING TIMES

Source data

This section presents the most important indicators related to various types of coverage and processing time for the first half of 2014 (clients invited up to 30 June 2014) from the Colorectal Cancer Screening Programme, including the preceding pilot study.

1. Reminder coverage level TOT HIER GEKOMEN

Of the 58,564 clients that had not returned their test within six weeks, 57,023 (97.4%) received a reminder (30.1% of all the invitees). Of the 1,541 non-respondents that did not receive a reminder, 1,140 (74.0%) initial tests had the status 'lost' . This involves the clients that contacted the screening organisation for a new test kit because the previous test kit had been lost.

2. Re-testing coverage level

Of the 2,096 participants that had a test result that was initially unreliable or uninterpretable, 2,093 (99.9%) were sent a new test kit. Of the 2,471 times that a test result was unreliable or uninterpretable (e.g. because of the repeated submission of uninterpretable tubes), a new test kit was dispatched in 2,465 (99.8%) of the cases.

3. Screening programme processing times

The average time (and range) between sending an invitation to the screening programme and collecting the stool sample (**collection interval**) was 18.5 (1-309) days (table 8).

The iFOBT **return interval** (process duration between collecting the stool sample and its analysis in the laboratory) was on average 1.3 (0-155) days. Over 99% of the stool samples were analysed within seven days of their collection.

The average **reminder interval** was 46.5 days. In almost 99% of the cases, the non-responders were reminded to attend the screening programme within eight weeks.

Table 8. Screening programme processing times in calendar days (source: ColonIS).

Average (range)	Relationship to target value
Collection interval	
18.5 (1-309)	n/a
Return interval	
1.3 (0-155)	99.2% within seven days
Reminder interval	
46.5 (44-272)	98.6% within eight weeks
Result dispatch interval	
1.0 (0-182)	96.8% within seven days
Result to primary pre-procedure interview interval	
18.1 (3-154)	72.9% within 21 days
Analysis to primary pre-procedure interview interval	
22.3 (4-157)	n/a
Completed pre-procedure interview to colonoscopy interval	
9.9 (1-178)	86.0% within 14 days
Result to colonoscopy interval	
32.0 (4-200)	50.9% within 28 days

n/a = not applicable

The **result dispatch interval** after analysis of the iFOBT was on average of 1.0 (0-182) days, 96.8% of the results were dispatched within seven days.

The **interval between dispatching the results** and the primary appointment for the **pre-procedure interview** was on average 18.1 (3-154) days. The target value of 21 days was reached in 72.9% of the cases.

The average **interval between the analysis** of the stool sample **and the primary appointment for the pre-procedure interview** for clients with an unfavourable test result was 22.3 (4-157) days.

The **interval between the completed pre-procedure interview and the colonoscopy** was on average 9.9 (1-178) days. In 86% of the cases, a colonoscopy was performed within 14 days of the pre-procedure interview.

The total **interval between dispatching an unfavourable result** and the actual **completion of the colonoscopy** was on average 32 (4-200) days and the target value of 28 days was reached in just over 50% of the cases. The primary cause of this was rescheduling of the primary appointment for the pre-procedure interview by the client: 27% of the clients rescheduled their primary appointment.