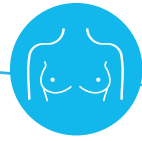


national evaluation of breast cancer screening in the Netherlands 2017/2018

June 2019



	2016 ↓	2017 ↓	2018 ↓
invited (mln)	1.3	1.3	1.3
examined (mln)	1.0	1.0	1.0
attendance	77.3 %	76.8 %	76.6 %
recall (referral) rate (per 1000 women screened)	24.3	23.0	22.3
mean individual screen interval (months)	23.9	23.8	24.1
invited	100.2%	100.5%	96.4%
	X false positive results*	📍 detection rate*	📊 positive predictive value
2016 →	17.4	6.9	28%
2017 →	16.3	6.6	29%

The attendance rate continued to decrease slightly.

Referral rate decreased slightly.

The percentage invited women decreased in combination with an increase in the mean individual screening interval.

Detection rate declined slightly

* per 1000 women screened



This monitor is available on: www.iknl.nl/borstkankermonitor
www.rivm.nl/monitoring-evaluatie-bevolkingsonderzoek-borstkanker

Table 1 Main results until 2018 with regard to attendance compared with previous years

	2013	2014	2015	2016	2017	2018
Targeted per year (x 1000) ¹	1,323	1,347	1,386	1,388	1,407	1,401
Net target population per year (x 1000)	1,265	1,284	1,302	1,317	1,332	1,321
Screening examinations	1,017,596	996,080	1,023,473	1,021,353	1,028,656	976,032
Invited	101.4%	98.4%	101.3%	100.2%	100.5%	96.4%
Overall attendance	79.4%	78.8%	77.6%	77.3%	76.8%	76.6%
- attendance initial invitations	77.3%	76.8%	75.6%	75.4%	74.6%	74.5%
- attendance reminder	19.7%	16.8%	17.4%	16.5%	17.2%	16.1%
Re-attendance ²	92.2%	91.8%	91.1%	91.1%	91.3%	91.5%
Recall (referral) rate per 1000 women screened	25.2	24.5	23.2	24.3	23.0	22.3
- recall with BI-RADS 5	1.5	1.6	1.6	1.6	1.6	1.5
- recall with BI-RADS 4	9.5	9.2	9.4	10.4	10.1	9.8
- recall with BI-RADS 0	14.2	13.7	12.2	12.3	11.3	11.0
Mean individual screening interval (months)	23.5	23.7	24.0	23.9	23.8	24.1
Next routine invitation within 24 ± 2 months	79%	86%	85%	85%	86%	78%
Screening interval <2.5 years	95.4%	95.5%	95.4%	95.0%	94.7%	94.5%
Result of screening examination < 10 working days	98.2%	98.3%	98.5%	99.1%	99.7%	99.6%
Non-responders	12.7%	12.8%	14.0%	13.9%	14.6%	15.1%
Non-participants	8.0%	8.4%	8.5%	8.8%	8.6%	8.3%

¹ Source: Statistics Netherlands; ² Calculated over last two screening rounds

Table 1 Main findings 2017/2018

- This monitor shows the first results on 2018 with regard to the number of invitations, and attendance and referral rate.
- In 2018 the target population decreased to a small extent for the first time since the introduction of the programme.
- In 2018 the number of screening examinations was lower than previous years. The mean individual interval between two screening invitations (screening interval) increased slightly. This resulted in a decrease in the percentage of women with their next routine invitation within 24 ± 2 months to 78%
- The percentage invited women decreased to 96.4%, and dropped below the target value of 98%. This decrease might possibly be due to a shortage in the screening workforce, resulting in a lower screening capacity.
- Attendance rate kept on decreasing to 77% in 2018. The re-attendance rate increased a little, indicating that women who choose to attend the programme also attend in subsequent rounds.
- Referral rate decreased slightly to 22.3 per 1000 women screened.

Glossary

• **BI-RADS:** Breast Imaging Reporting and Data System, radiological classification system. BI-RADS 0: incomplete, further imaging or information required; BI-RADS 4: suspicious abnormality; BI-RADS 5: highly suggestive of malignancy • **False positive results:** number of referred women in whom breast cancer was not diagnosed per 1000 women screened • **Final screening result known:** the proportion of referred women whose final screening result is known within 6 months after screening examination • **Interval cancer:** breast cancer diagnosed in screened women during the interval between two screening rounds and where diagnosis did not follow from the screening examination • **Invited:** number of invited women from the target population • **Mean individual screening interval:** mean screening interval in months between previous and the current screening examination • **Next routine invitation:** the proportion of women invited for the current screening examination between 22-26 months after the previous screening examination • **Non-participants:** invited women who unsubscribed • **Non-respondents:** invited women who did not attend the programme and gave no notification • **Overall attendance:** proportion of women invited for screening who attended the screening programme as a result of this invitation • **Partially-assessable screening examination:** screening examination that does not meet the required quality for adequate diagnosis • **Positive predictive value (PPV):** the proportion of women in whom referral resulted in a diagnosis of breast cancer • **Programme sensitivity:** the proportion of screen-detected breast cancers (of all breast cancers, screen-detected and diagnosed within the first 2 years after a screening examination) • **Programme specificity:** the proportion of women without breast cancer correctly not referred after a negative screening examination (of all women without breast cancer within the first 2 years after a screen examination) • **Re-attendance:** the proportion of attendees in the current screening round of the women who attended the previous round • **Response to recall (referral):** the proportion of referred women who followed the advice they were given and had a clinical assessment in hospital • **Result of screening examination:** the proportion of letters containing the result of the screening examination sent within 10 working days after the examination • **Screening examinations:** number of women who underwent a screening examination in a specific year, irrespective of the year of invitation.

Table 2 Main results until 2017 with regard to results compared with previous years

	2013	2014	2015	2016	2017
Breast cancer detection per 1000 women screened	6.9	6.9	6.9	6.9	6.6
PPV recall (referral recommendation)	27%	28%	30%	28%	29%
False positive results per 1000 women screened	18.4	17.7	16.3	17.4	16.3
- after non-invasive assessment per 1000	11.9	11.4	9.9	10.6	10.4
- after invasive assessment per 1000	6.1	5.7	5.9	6.3	5.4
False positive results after BI-RADS 5	5%	4%	4%	5%	5%
- after non-invasive assessment ¹	2%	1%	1%	1%	2%
- after invasive assessment ¹	3%	3%	3%	3%	3%
False positive results after BI-RADS 4	58%	58%	58%	61%	60%
- after non-invasive assessment ¹	21%	20%	17%	20%	22%
- after invasive assessment ¹	36%	36%	39%	38%	36%
No signs of breast cancer after BI-RADS 0	90%	89%	88%	89%	90%
- after non-invasive assessment ¹	69%	69%	67%	69%	72%
- after invasive assessment ¹	18%	17%	18%	18%	15%
Screen-detected cancers	7,011	6,849	7,081	7,025	6,796
Ductal carcinoma in situ (DCIS)	21.9%	20.6%	22.0%	22.0%	21.4%
Invasive breast cancers	78.1%	79.4%	78.0%	78.0%	78.6%
Response to recall (referral)	99.6%	99.2%	99.7%	99.5%	99.0%
Final screening result available/known < 6 months after screening	99.4%	99.0%	99.4%	99.0%	98.6%
Partially-assessable screening examinations	0.4%	0.2%	0.1%	0.1%	0.1%
Cost per screening examination (€)	65.05	66.06	66.30	67.01	67.82

¹ Percentages do not add up to total due to missing information

Table 2. Main findings 2017

- Table 2 shows the results of the screening programme with regard to the final results until 2017. In 2017 the detection rate of 6.6 / 1000 women screened was somewhat lower than before. In combination with a slight decrease in referral rate this led to a positive predictive value of 29%.
- In total 6,796 screen-detected cancers were diagnosed, of which 21% were DCIS.

- The percentage of women for whom the final screening result was available <6 months after screening is somewhat lower than previous years. This might indicate that the data will be completed in the period to come. In previous years this resulted in a higher detection rate.
- Due to the decreasing attendance rate costs per screening examination increased.

Findings per 1000 women screened:

2013



21 6 24 47 2

2017



23 6 23 45 3

- Breast cancer, invasive
- Breast cancer, in situ
- No signs of breast cancer, after non-invasive assessment
- No signs of breast cancer, after invasive assessment
- No signs of breast cancer, missing information on assessment

Table 3

Interval cancers 2011-2015*

	2011	2012	2013	2014	2015
Screening examinations (x1000)	986	1,009	1,018	996	1,023
Screen-detected breast cancers	6,300	6,751	7,011	6,849	7,081
- Breast cancer detection per 1000 women screened	6.4	6.7	6.9	6.9	6.9
Interval cancers	2,102	2,163	2,140	2,224	2,222
- Interval cancers per 1000 women screened	2.1	2.1	2.1	2.2	2.2
Programme sensitivity	75.0%	75.7%	76.6%	75.5%	76.1%
Programme specificity	98.5%	98.3%	98.1%	98.2%	98.4%

* year of screening examination differs from Tables 1, 2 and 4

- Data on interval cancers diagnosed within 2 years after a screening examination were available up to 2015 and compared with the previous 4 years.
- The detection rate did not increase any further, and the proportion interval cancers remained stable.
- The programme sensitivity and specificity also remained stable.

Table 4

incidence- and mortality rates

	2013	2014	2015	2016	2017
Incidence of breast cancer (ESR)¹					
Incidence of invasive breast cancer / 100,000 (ESR)	342.7	341.7	335.8	336.4	334.5
Incidence of in situ breast cancer / 100,000 (ESR)	75.7	67.6	72.5	71.0	67.4
Breast cancer mortality / 100,000 (ESR)²	58.6	55.2	59.2	57.4	53.3
Breast cancer mortality compared with 1986/1988 50-74 years	-37.7%	-41.4%	-37.2%	-39.0%	-43.4%
Breast cancer mortality compared with 1986/1988 55-79 years	-37.3%	-40.7%	-34.0%	-39.0%	-40.1%

¹ Source: Netherlands Cancer Registry; ² Source: statline.cbs.nl/statweb/

- The incidence of invasive breast cancer and the incidence of in situ breast cancer (DCIS) both decreased slightly in women 50-74 years of age.
- In 2017 the breast cancer mortality in women 50-74 years of age decreased to the lowest level since the introduction of the screening programme.

This monitor presents the main outcomes of the Dutch breast cancer screening programme in 2017/2018 and compares them with previous years. The results are based on a predefined set of indicators measuring the quality of all the steps in the programme from invitation to the final outcome of screening; these data have been updated up to April 2019.

This monitor also includes data about interval cancers diagnosed within the first two years following screening in women screened up to and including 2015.

In order to interpret these results optimally, it is necessary to know the final screening results of at least 95% of referred women. This percentage was achieved in 2017 (98.6%).

Data on the incidence of breast cancer were derived from the Netherlands Cancer Registry (IKNL: www.iknl.nl/nkr-cijfers). Data on breast cancer mortality originate from Statistics Netherlands (CBS; statline.cbs.nl/Statweb/). Both websites were consulted on April 11, 2019.