National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Cervical Cancer Population Screening in the Netherlands
Factsheet 2021

This factsheet is meant to give general information about the Dutch cervical cancer population screening programme. It is not meant for use in scientific publications.

What does cervical cancer screening entail?

The Dutch cervical cancer screening programme invites all persons from the target group aged 30 to 60 every 5 (-10) years to participate in the screening programme. The aim of the screening is to reduce cervical cancer mortality by detecting precancerous lesions of cervical cancer early on, to prevent the development of cervical cancer. The early detection of cervical cancer or preliminary stages can prevent serious illness or mortality.

COVID-19

The COVID-19 pandemic also affected the screening programme. Due to COVID-19, the programme was postponed form March 2020 until July 2020. In those months no primary invitations were sent, and people were discouraged to visit the GP for a smear or submit a self-sampling kit. Overall, the number of invited persons decreased with 25% over 2020.

After restarting, the screening programme scaled up the number of invitations to 120%, in order to catch up the delay. This delay will be caught up with in January 2022.

Because of COVID-19, this factsheet presents the facts and figures of 2019, because these are more representative.

1. Disease characteristics

Cervical cancer is mostly caused by a persistent infection with high risk Human Papilloma Virus (HPV) (hrHPV). HPV is a sexually transmitted virus, which infects about 80% of all men and women at some time in their lives. Usually, the infection is dealt with successfully by the body's immune system.

Sometimes, however, infection becomes persistent and this can lead to abnormalities in the cells of the infected tissue. The existence of these abnormalities is regarded as a precancerous medical condition. Over a period of 10 to 15 years, the abnormal cells can develop into cervical cancer, often asymptomatic.

In the Netherlands, roughly 200 persons per year die as a result of cervical cancer.

In 2019, the screening programme found almost 5.000 persons who had cervical precancerous lesions, which is 1,1% of all participants[1]. It is estimated that the number of prevented cancers is 700 and that there are 325 prevented deaths per year[2].

2. Target group for population screening

Cervical cancer population screening include persons of the target group aged between thirty and sixty, who are invited for a HPV-test once every five or ten years.

3. Facts and figures

The monitoring of the programme

Annually, the screening programme is being monitored for its performance.

The facts and figures from 2019 are presented below.

Figures from 2019 (1)	Value
Incidence of cervical cancer and mortality	905 new cancers, 216 deaths
Volume of the target group	807.629
Participation rate	56%
Number of tests by GP	413.632 (=91,4% of all participants)
Numbers of self-sampling tests	38.992 (= 8,6% of all participants)
Coverage rate	73,1%
Percentage hrHPV-positive	9,8%
Direct referral rate	3% referral to gynaecologist
Detection rate (CIN2 or cancer) per 1000	1,1%
Positive predictive value direct of the referral	34,9%
Cost per participant	€ 64 (3)
Cost effectivity (per life-year gained)	€ 3.941(3)

Terminology

Incidence: number of new diagnoses.

Participation rate: percentage of persons that in response to an invitation participated in the screening programme. The reference date is always April 1st of the next year, even though participation rate will still climb after this date.

[1] The programme includes women, transmen and/or gender diverse people with a cervix, in the age 30-60 years

Coverage rate: percentage of persons within the range of the screening age group that took at least one cervical smear of hrHPV test in the five years before the reference date (in or outside the screening programme).

Referral rate: Percentage of participants that are referred to the gynaecologist for further examination. Participants can be referred after the primary test (direct) or after the control smear (indirectly).

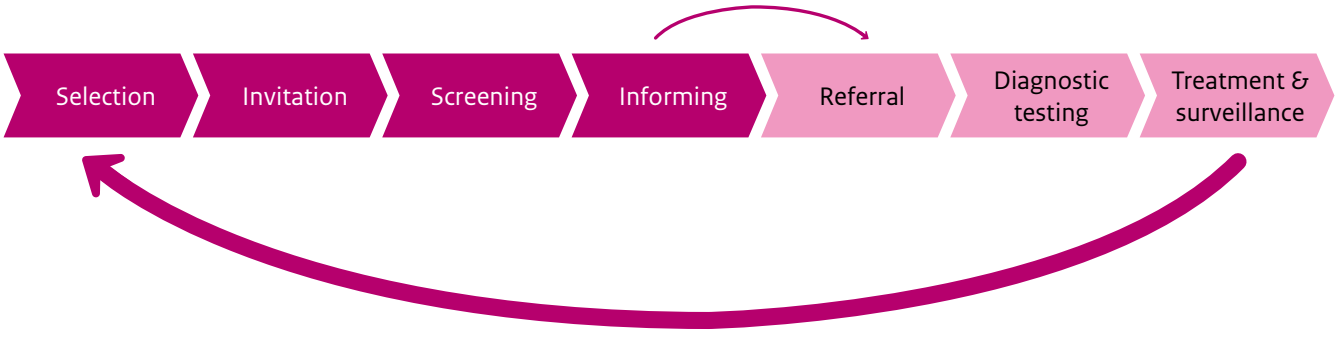
Detection rate: Percentage of participants in whom a precancerous lesion or cervical cancer (CIN2+) was detected. This indicates the chance of detecting a relevant abnormality after participation.

Positive predictable value: percentage of participants who are referred to a gynaecologist and in whom a precancerous lesion or early cervical cancer was detected (CIN2+). Thus, the probability that a participant with a positive screening test actually has the condition diagnosed.

Cost per participant: cost of the screening programme. Diagnostic testing and treatment are not included in these costs.

4. Screening Programme

The primary process is about screening persons in the age of 30 to 60 on hrHPV and cytological abnormalities as shown in the next diagram.



Procedure

Selection and invitation

The screening organisation selects the target group invitees from the Dutch population register [2]. They use the ICT-system ScreenIT for their logistics and communication with the target group.

Persons aged 30, 35, 40, 50 and 60 years old are invited every 5 year to attend an hrHPV test by the general practitioner (GP). Persons in the age of 45 or 55 are invited only when their previous hrHPV test result was positive or when they did not participate at the age of 40 or 50 year. When a 60-year-old person has a hrHPV positive result and is not referred to a gynaecologist, then this person will also be invited at the age of 65.

The invitation contains an invitation letter and an educational leaflet with information about screening, including its advantages and disadvantages, the smear test procedure and the possible results. Accompanied to this information, the possibility of participating the programme by using a self-sampling device is briefly mentioned. This self-sampling device is meant for those who are reluctant to go to the GP for a hrHPV test.

[2] This contains basic information of all residents in the Netherlands

Invited persons can also decide to withdraw from the programme for this screening round or permanently.
When a person decides to attend to the screening programme, there are two options:

- make an appointment at the GP's practice for a pap smear
- order a self-sampling kit online, by phone or by letter.

Persons who neither attend for testing nor withdraw explicitly from the programme, receive a reminder, inviting them again to participate. In this letter, more information is given about the self-sampling kit, including a form to order the kit.

Screening

Smear tests are performed in GP practices, sometimes by a GP but usually by a (female) practice assistant. The material collected (cell sample) is placed in a container, then dispatched to the laboratory. When a person uses the self-sampling kit, the test is sent directly to the laboratory.

The smear collected by the GP will be tested in the laboratory on the presence of hrHPV. When the sample is hrHPV positive, a cytological assessment will follow. Within four weeks, the laboratory sends both test results to the screening organisation. The screening organisation sends the results to the GP and to the participant. When the result of the cytology test is abnormal, further investigation by a gynaecologist is required. In case of more severe abnormalities (HSIL) the GP will strive for contact the participant.

The self-sampling test will be assessed on the presence of hrHPV. The test result will be sent to the screening organisation. Participants of the self-sampling test receive written test results by the screening organisation within four weeks.

When the sample is hrHPV-positive, the participant needs to make an appointment with the GP's practice for a pap smear. This pap smear will be assessed on cytological abnormalities at the laboratory.

Informing and referral

The possible test results and the implications of each are as follows:

- No hrHPV found. Persons in the age of 30, 35, 45 and 55 will be invited again after 5 years. Persons in the age of 40 and 50 who are tested HPV negative, will receive an invitation after 10 years. 90% of all participants test negative on HPV.
- hrHPV positive but no abnormal cells found. Persons are invited for another pap smear after 6 months, to check whether no abnormalities have developed. Almost 7% of all participants receive this result.
- hrHPV positive and (slightly) abnormal cells. Referral to a gynaecologist is necessary. 3% of all participants receive this result.
- The sample is non-assessible/ uninterpretable. Less than half per cent of all participants receive this result.

Test result	Follow up
HPV-	End of screening round
HPV+ with NILM	Control smear in 6 months
HPV+ with ASCUS / LSIL / HSIL	Referral

Who is involved in the screening programme?

- At the national level, screening is organised on behalf of the Ministry of Health, Welfare and Sport by the RIVM (the Dutch National Institute for Public Health and the Environment) Centre for Population Screening (CvB). The RIVM-CvB also develops the national public information materials.
- Execution is done by a national screening organisation (SO). This involves inviting the target group, ensuring that the screening is carried out properly and communicating the result of the screening to the participant. It is ISO certified. The SO contracts the laboratories where assessment takes place and ensure that there is sufficient capacity within the region to analyse the tests.
- GPs (or practice assistants under the supervision of a GP) perform the smear tests. When necessary, GPs refer participants to gynaecologists for further assessment. This is based on the outcome of the smear test. GPs are also responsible for informing and counselling participants in case of referral.
- The laboratories process and assess the sample material (self-samples and smear).and communicate the results to the SO. In case of the smear test, the results are communicated to the person's GP. On the SO's behalf, the laboratories inform the participant's GPs if no follow-up investigation is undertaken.
- Annual monitoring of the programme is performed by IKNL (Netherlands Comprehensive Cancer Organisation).

- The Cervical Cancer Screening Programme Committee, invited by the RIVM-CvB, advises the RIVM on national coordination and implementation of the programme. The Programme Committee is made up of experts from relevant professions or networks, people from organisations with authority on particular topics, and other contacts active in the field.
- Proposed changes in the programme, need to be approved the Ministery of Health, Welfare and Sport, after advice from the Health Council[3].

Advantages and disadvantages

Advantages

The screening is effective in detecting hrHPV and performing further cytological assessment to find precancerous conditions or cancer in an early state. By treating such conditions, it is possible to prevent advanced cancer. This is the main advantage of the screening programme.

Disadvantages

There are a few disadvantages in the programme.

- The screening results are not 100 per cent correct. Results can be false positive or false negative. A false positive result is when a person is told that there are found abnormal cervical cells, but in fact the cells are normal. Those participants get a referral to a gynaecologist while they have no abnormalities that should be treated. The referral can cause unnecessary anxiety and tension for these participants. In case of false negative results, the smear test did not detect abnormal cells or cervical cancer.
- The screening programme detects mostly precancerous lesions and rarely cervical cancer. Some precancerous lesions resolve without treatment. Lower grade lesions are therefore not treated. However, also higher-grade lesions can be treated while they would resolve. This can lead to unnecessary treatments which can have a great impact on a patient.

5. History

Systematic screening for cervical cancer in the Netherlands began in 1976. Since then the programme has changed a lot. Main changes in the early years were the extending of the target group and increasing the screening interval form 3 years to 5 years.

More recent (2017) there has been a fundamental change in the extension of the screening programme by the introduction of a primary test on HPV, followed by a cytological test if the participant is found to be HPV-positive. In addition, the self-sampling kit was introduced, by which participants are able to take a vaginal swab at home.

6. Developments

The population screening on cervical cancer is a dynamic programme. In 2021 there is made a start for the preparation of the entry of the first women who have been vaccinated for HPV in 2023. Late 2021, the Health Council has send an advisory report to the Dutch Government with the following recommendations:

- Position both self-sampling and the original pap smear as equal options to participate. Send the self-sampling kit automatically to all the invitees in order to decrease any obstacles for participation in the population screening programme. This should encourage more women to participate in the population screening programme. It should also mean that more cases of cervical cancer will be detected at an early stage
- Develop more specific criteria for referral in order to decrease the number of clinical irrelevant referrals. A further reduction of irrelevant referrals should be achieved by adding genotyping and by extending the follow up cytology (in case of HPV-positive with no cytological abnormalities) from 6 to 12 months.
- Explore the introduction of computer-assisted screening in order to determine whether this method is equivalent to the current screening procedure.

7. Finance

The screening programme is funded by the Dutch national government. The screening organisation receives grants to meet the cost of its own activities and to enable it to compensate the GPs and laboratories. In 2019, the cost per participant was €64. The RIVM is financed by the Ministry of Health, Welfare and Sport to coordinate the programme. The total cost of the cervical cancer screening programme is roughly 30 million euros per year.

The estimated cost per life year gained is €3.941 (based on 2019 data).

[3] The Health Council of the Netherlands is an independent scientific advisory body whose legal task it is to advise the Dutch ministers and Parliament in the field of public health and health/healthcare research

8. International

The Netherlands has a well-organised screening programme. In 2017 it was the first country with a population-based HPV-screening programme.

9. Websites and documents

- Cervical cancer screening programme | RIVM
- Health council
- Information for participants
- Invitation letter

Factsheet the cervical cancer screening programme and the use of self-sampling.

10. Contact

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Abbreviations

ASC-US: Atypical squamous cells of undetermined significance
CIN: cervical intraepithelial neoplasia

NILM: Negative for intraepithelial lesion or malignancy
LSIL: Low-grade squamous intraepithelial lesion
HSIL: High grade squamous intraepithelial lesion

References

1. National monitoring of the cervical cancer screening programme in the Netherlands 2019 | RIVM
2. https://www.iknl.nl/nkr-cijfers
3. Kosteneffectiviteitsanalyse bevolkingsonderzoek baarmoederhalskanker

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De zorg voor morgen begint vandaag

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