Options for improving population screening for cervical cancer

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Executive summary

Health Council of the Netherlands

Population screening for cervical cancer was renewed in 2017. That innovation was intended to make population screening more effective and more accessible. Previously, smear tests, performed by general practitioners, were assessed in a laboratory for abnormalities in the cells of the cervix (cytology). Since 2017, smears are first tested for the presence of those types of human papillomavirus that are associated with a high risk of developing cervical cancer (hrHPV). Cytology will only be performed on the smear if the hrHPV test is positive.

Another innovation, in addition to this 'phased screening', is that women can request a self-sampling kit from their general practitioner. In the privacy of their own home they can use this to swab some material from their vagina, which is then assessed for hrHPV in a laboratory. The self-sampling kit is intended to mitigate any obstacles to participation in the population screening programme. If the result of the hrHPV test is positive, then the general practitioner will still need to perform a smear, as cytology cannot be performed on self-collected samples.

The introduction of the innovation in 2017 has had both a favourable and an unfavourable impact on the results of population screening for cervical cancer. The participation rate, which was already low, underwent a further decline from about 65% to 56%. The reason for this has yet to be determined. In addition, more of those women who are referred to a gynaecologist are subsequently found to have neither cervical cancer nor any of its precursors (such cases are referred to as clinically irrelevant referrals). On the other hand, phased screening detects more cases of cervical cancer and its precursors.

At the request of the State Secretary for Health, Welfare and Sport, the Health Council of the Netherlands issues this advisory report on some specific options for improving population screening for cervical cancer. The Committee on Population Screening has examined the option of making the self-sampling kit more accessible, as well as ways of reducing clinically irrelevant referrals to gynaecologists, and the potential of computer-assisted screening (CAS).
A comprehensive evaluation of population screening for cervical cancer will follow in a few years' time (in 2024).

Automatically send self-sampling kits

Before its introduction in 2017, the self-sampling kit was assessed in screening trials. The hrHPV tests performed on samples obtained with self-sampling kits were found to be equivalent to the hrHPV tests on smears taken by general practitioners. Since its introduction in 2017, a different combination of hrHPV test and self-sampling kit has been used. This combination, too, has now been found to produce equivalent results. The committee recommends that all women are equivalently offered a smear test or a self-sampling kit. It takes the view that giving *all* women complete freedom of choice between these tests can substantially mitigate any obstacles to participation in the population screening programme.

The committee also recommends that self-sampling kits should be automatically sent to all invited women. Approximately 11% of participants used the self-sampling kit in 2019 (two years after the renewal of the population screening programme). That is well below the 30% that used the kit during the screening trial. One reason for this might be that kits were automatically sent to all those who participated in the screening trial. Since 2017 these kits are not sent to them automatically.

The committee anticipates that offering the self-sampling kit as an equivalent alternative to the smear test, and sending the kits automatically, 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 – especially because those women who do not currently participate are the very women who are at higher risk of developing cervical cancer.

The committee also considers it likely that providing target group-specific information and support will also be needed to emphasise the importance of participation, including any required follow-up steps. This is especially important with regard to the self-sampling kit, where – in the event of a positive hrHPV result – a women's general practitioner will still need to perform a smear test, for the purposes of the necessary cytology. In the screening trial, almost 10% of the women who obtained a positive test result with a self-sampling kit did not respond to that invitation. The committee takes the view that this is a worryingly high percentage, given that these women are at increased risk of cervical cancer or its precursors. In practice, that percentage has actually increased since 2017 and it now exceeds 20%. According to the committee, it is relevant to seek well-considered ways of reducing this percentage, as a matter of urgency.

Use more specific criteria for referrals

Since the renewal of population screening for cervical cancer, more women are being referred to gynaecologists. Quite a few of these individuals are subsequently found to have neither cervical cancer nor any precursors. Accordingly, these women are being unnecessarily burdened with anxiety and with testing procedures. If the hrHPV test was used to distinguish hrHPV types with a *clearly* increased risk from those with a *moderately* increased risk, this would substantially reduce the number of clinically irrelevant referrals. Cases of hrHPV with a *clearly* increased risk are already referred if atypical cells are observed during cytological examination (ASCUS also known as Pap 2). Cases of hrHPV with a *moderately* increased risk are 'only' referred if more abnormalities are observed in the cells (HSIL also known as Pap 3a2). Women with a positive hrHPV test who – based on the cytology – do not need to be referred to a gynaecologist are invited to undergo follow-up cytology in due course. According to the committee, if the term

for such follow-up cytology were to be extended from 6 to 12 months, the number of clinically irrelevant referrals could be reduced still further.

Fewer referrals means that population screening may fail to detect more cases of cervical cancer. Modelling indicates that this scenario may involve two more cases per year than the current situation. According to the committee, however, this is far outweighed by the benefits of the adjusted scenario. This same modelling indicates that the adjusted scenario would deliver a significant reduction in the number of clinically irrelevant referrals (4,265 fewer per year). It would also lead to a significant increase in the number of women in whom a clinically relevant precursor of cervical cancer is detected (42 more per year).

Incidentally, this is also subject to the recommendation that well-considered ways should be sought to reduce the numbers of women who have a referral but who do not subsequently consult a gynaecologist.

Introduce computer-assisted screening

At present, cytology is an entirely manual process. Each preparation is individually assessed for abnormalities by a laboratory technician or a pathologist. It is quite possible to automate part of this process. Such computer-assisted screening (CAS) involves an automated selection between ‘definitely no’ and ‘possibly some’ abnormal cells. The final decision rests with the laboratory technician or pathologist.

The committee recommends that CAS be introduced, subject to the condition that a pilot project is carried out to determine whether this method is equivalent to the current – entirely manual – screening process. Aside from the purely technical aspects, any such pilot project must also take account of the learning curves. In other words, laboratories and laboratory technicians need time to prepare and to master the technology.

A key advantage of CAS is that it is less labour intensive. The committee wishes to point out that, while computer-assisted screening is certainly less labour-intensive, backlogs can arise regardless of the screening method used. The only way to prevent them is to ensure that the system has sufficient capacity to deal with any peaks in demand.

Research prior to comprehensive evaluation

The State Secretary plans to ask the Health Council to conduct a comprehensive evaluation of population screening for cervical cancer in 2024. One key consideration is that sufficient scientific data must be available by that time. With that in mind, the committee would like to draw attention to certain aspects that certainly need to be addressed as part of this comprehensive evaluation, and that will need to be researched in depth before then. Take, for instance, the role of general practitioners in making population screening for cervical cancer more accessible.

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