

Preliminary results of a general practice based call system for cervical cancer screening in the Netherlands

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SUMMARY. A study was undertaken in Nijmegen, in the Netherlands, to compare the attendance rate following a call system for cervical cancer screening organized by general practitioners, with the attendance rate resulting from the Dutch national call system. Women are invited for screening on a three yearly basis and in 1990 1616 women were identified by nine practices as being in the appropriate age group (35 to 54 years) to attend for cervical cancer screening while 10 387 women were identified by the national call system. The attendance rate among the 1101 women in the rural general practices was 58%, compared with 49% of 4154 women in the matched group receiving an invitation from the national call system. The attendance rate among the 515 women in the urban general practices was 55%, compared with 41% of 6233 women in the matched group receiving an invitation from the national call system. Invitations from general practitioners resulted in similar percentages of women in all age groups attending for screening. Four general practices sent a reminder letter or made a telephone call to non-attenders. A reminder increased the attendance rate from 58% to 70%.

It is concluded that a general practice based call system for cervical screening produces a higher attendance rate than the national call system.

Keywords: cervical screening, call systems, uptake; patient compliance, screening programmes.

Introduction

SCREENING programmes in the Nordic countries have reduced the incidence of cancer of the cervix and the mortality rate.¹⁻⁵ However, the studies identified the necessity for an organized programme of cervical cancer screening to ensure high attendance rates and adequate follow up of cytological abnormalities.¹⁻⁵

In the United Kingdom, most screening programmes have not been organized systematically and have had a limited effect.⁶⁻⁸ The main problem with the British programmes is the inadequate

means with which to contact women, particularly those in older age groups who have a higher risk of developing cervical cancer.⁹⁻¹¹ Call and recall systems which have been set up in several districts and general practices have improved the attendance rate for cervical screening.¹²⁻¹⁶ In May 1988, a national cervical cytology call and recall system was introduced in the UK. This system is based on computerized age-sex registers. However, the accuracy of these databases is problematic and needs to be improved.^{17,18}

In the Netherlands, screening for cervical cancer was initiated by the government in three pilot regions in 1976. The pilot programme was systematically and centrally organized and was carried out in special mobile units. It reached a high proportion of the target group (attendance rate 65-75%) and showed a decline in incidence of invasive squamous cell carcinoma.^{19,20}

However, during the pilot study many general practitioners and gynaecologists took smears outside the systematic screening organized from the special mobile units. Many women were screened in both contexts, with only a marginal improvement in coverage. The combination of organized and opportunistic screening led to a limited additional health effect, but the large number of smears resulted in high costs.²¹ To reduce double screening, the Dutch government allocated the task of taking smears to general practitioners.

A nationwide screening programme for cervical cancer was started in the Netherlands in 1989. Every three years, all women in the age group 35-54 years were invited for a cervical smear. Contrary to the pilot programme, this nationwide programme was not organized centrally. The women received a letter from the local health authority inviting them to make an appointment with their general practitioner who then took the smear. Because those inviting the women were different from those taking the smears, it was difficult to monitor compliance and send reminders. The attendance rates resulting from the nationwide screening programme were disappointing. Local health authority districts who evaluated responses to screening have found overall attendance rates of about 40% (unpublished data).

It was thought that involving general practitioners in calling women for screening would reduce unnecessary double screening. If general practitioners were involved in the call system and acquainted with the schedule, it was thought they would try to screen women according to the schedule. Prior to sending invitations, general practitioners could exclude those who had been screened recently. It was also thought that the personal bond between the women and their doctor would promote participation in screening.

A project was therefore undertaken in 1990 to set up a call system for cervical screening within general practice. This study analyses the attendance rate resulting from a call system organized by general practitioners and compares the outcome with the results of the national system.

Method

Selection of practices

General practices in the region of Nijmegen which had a computerized age-sex register and which sent cervical smears to a

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regional health laboratory were eligible for the study. Eleven practices met the selection criteria. These practices were asked to participate and nine were willing (some other practices had heard about the project and wanted to participate but were excluded as this self-selection would have resulted in bias). None of the nine practices selected had taken any initiatives to organize cervical screening or had shown any special interest in cervical screening.

Selection of women for screening

In the first year of the study (1990) all invitations for screening in the participating practices were organized by the researchers. The population register (a register of names, addresses and dates of birth held by the local registry office) was used as the main source of information to identify women due for screening, that is, women aged between 35 and 54 years. In January 1990 the researchers received a data file from each of the nine participating general practices of the names of the women whose dates of birth indicated that they should be invited in 1990 according to the three yearly national call schedule. The researchers checked this list against the list from the population register to identify those women who were registered with a non-participating practice. Lists of these women were sent to the local health authority, who invited them to make an appointment with their general practitioner for a cervical smear. The researchers could therefore ensure that all women due for screening were invited.

From the data file from each of the general practices a monthly list of potential invitees was compiled, which distributed the women equally over 12 months. In order to ascertain eligibility, every month, each general practice received a checklist for each woman asking whether she had recently had a cervical smear (within one year); whether she had undergone a total hysterectomy; and whether she was receiving follow up for previous cytological abnormalities. The list was then returned to the researchers and they sent each eligible woman a letter on behalf of the general practitioner, inviting her to make an appointment with her general practitioner for cervical screening. Four of the general practices also sent reminder letters or made a telephone call to non-attenders after four weeks.

Urban and rural practices

Screening in the region of Nijmegen during the pilot project (1976–85) had shown a lower attendance rate in urban areas compared with rural areas.¹⁹ Three of the nine participating practices were situated in an urban area. Most of the women registered with one of these practices lived in the same district of the city as the practice and as each other. According to data from the local government department of social economic research there was little difference in socioeconomic factors between this district and the whole city. Therefore for these three urban general practices, controls were defined as all women from the same city who were invited by the national call system. The other six general practices were in rural areas. For these practices, a control group of women was defined as all women from comparable rural communities who had been invited by the national call system.

Analysis

After one year, the attendance rate as a result of the general practice call system was compared with the attendance rate resulting from the national call system. All women identified through the population register on the basis of their age were invited in the control group, whereas only those women who were eligible were invited from the nine practices. To enable comparison of the two groups, attendance rates (and 95% confidence intervals²²) for both groups were calculated for all women who

were identified through the population register on the basis of their age.

Because of a possible effect of age on the response rate, a difference in age distribution might bias the results. Therefore age-specific attendance rates for both groups were compared. These series were tested for equality using the chi square test; the expected numbers of attenders and non-attenders in the group identified for screening by their general practitioner were estimated on the basis of the observed aged-specific attendance rates among the women invited by the national screening programme.²³ Homogeneity of the effects within the age groups was tested using the chi square test in which the ratios of observed to expected attenders and non-attenders were the weighting factors.²³

Results

A total of 1616 women were identified by the general practices for cervical screening: 515 women from urban practices and 1101 from rural practices. Of these women, 284 women (17.6%) did not need to be screened: 158 women had had a recent smear, 13 were receiving follow up for previous cytological abnormalities, and 113 had had a total hysterectomy. As a consequence, 1332 women were invited by the general practices to attend for a cervical smear.

In the control group, 10 387 women were invited by the national call system: 6233 from an urban area and 4154 from a rural area.

The overall attendance rate among women identified by their general practitioners was 56.9%, compared with 44.4% of women invited by the national screening study. Excluding the 284 women found to be ineligible for screening, the attendance rate among women invited by their general practitioners was 69.0%. Among the women identified by general practices in the urban area, 282 attended for screening, an attendance rate of 54.8% (95% confidence interval (CI) 50.5% to 59.1%). In the urban control group, 2552 women attended (40.9%, 95% CI 39.7% to 42.1%). In rural practices, 637 women attended, a rate of 57.9% (95% CI 55.0% to 60.8%), compared with 2056 women in the rural control group (49.5%, 95% CI 48.0% to 51.0%).

When analysed by age group, the attendance rate among women identified by the general practices was higher than among those invited by the national screening programme for each age group (Table 1). This was true for both the urban and the rural areas. In the urban practices the test for equality of attendance rates showed a difference in attendance rates ($\chi^2 = 35.1$, 6 degrees of freedom $P < 0.001$). The non-significant result of the test on homogeneity showed that the effect was the same in each group. Therefore, age cannot account for the differences in attendance rates between the two groups of women. In the rural intervention group the test for equality of attendance rates also showed a difference in attendance rates ($\chi^2 = 44.7$, 6 df, $P < 0.001$). The test on homogeneity ($\chi^2 = 12.24$, $0.05 < P < 0.1$) showed borderline homogeneity of the effect for the separate age groups. Examination of the contribution of each age group revealed that the year of birth 1940 contributed 5.53 to the chi square score of 12.24. This age group therefore showed a stronger effect, which is also shown on Table 1. In the rural area, the attendance rate among women born in 1940 who were invited by their general practitioner was 17.6% higher than among those invited by the national call system; the overall difference in the rural area was 8.4%.

In four practices (three in rural areas and one in an urban area) non-attenders received a reminder. After the first invitation, the overall attendance rate among the 574 women identified in these practices was 58.2% (95% CI 54.2% to 62.2%). The reminder

Table 1. Attendance rates for cervical screening among women identified by their general practitioner and by the national screening programme, by location and by age.

| Year of birth | % of women attending in | | | |
|---------------|---------------------------------|------------------------------------|---------------------------------|------------------------------------|
| | Rural areas | | Urban areas | |
| | Invitation from GP ^a | Invitation from national programme | Invitation from GP ^a | Invitation from national programme |
| 1937 | 57.4 (n = 122) | 43.6 (n = 388) | 47.2 (n = 36) | 31.8 (n = 648) |
| 1940 | 60.1 (n = 143) | 42.5 (n = 485) | 52.2 (n = 23) | 37.2 (n = 744) |
| 1943 | 51.1 (n = 135) | 47.6 (n = 502) | 52.9 (n = 34) | 39.1 (n = 704) |
| 1946 | 63.7 (n = 215) | 51.9 (n = 657) | 52.6 (n = 97) | 43.1 (n = 1026) |
| 1949 | 56.5 (n = 184) | 51.7 (n = 719) | 57.5 (n = 87) | 45.3 (n = 951) |
| 1952 | 54.6 (n = 163) | 49.6 (n = 718) | 57.7 (n = 111) | 41.7 (n = 1051) |
| 1955 | 59.0 (n = 139) | 54.5 (n = 685) | 55.1 (n = 127) | 43.6 (n = 1109) |

n = total number of women in group. ^aAttendance following reminders not included.

increased the attendance rate to 70.2% (95% CI 66.5% to 73.9%). Of the 574 women in these four practices, 92 (16.0%) were not eligible for screening. Excluding these 92 women, the attendance rate was 83.6%.

Discussion

The study found that the call system organized on a general practice basis resulted in a 13% higher attendance rate for cervical screening than the national call system. Excluding the ineligible women not invited by the general practitioners, the attendance rate would have been even higher.

Studies in several countries have shown that a well organized screening programme can achieve a 70% attendance rate which results in a substantial reduction in both the incidence of and mortality rate from cervical cancer.^{1,2} Among the four practices who sent a reminder letter or made a telephone call to non-attenders, the attendance rate increased from 58% to 70%. Excluding the 92 women found to be ineligible for screening, the rate in these practices was 84%, thus only 16% of the women were true non-attenders.

The lower attendance rate among women in urban areas compared with women in rural areas found in a previous study¹⁹ was also found in the present study. Invitations from general practitioners resulted in similar percentages of women in all age groups attending for screening. Because older women (who are also those most at risk of cervical cancer) usually are least likely to participate in screening programmes,^{10,11} this is an important advantage of the general practice based call system.

Involving general practitioners in the organization of a cervical screening programme will not only lead to a higher attendance rate, but also to a more efficient organization of cervical screening in the general practice. For example, in four of the general practices in this study, most of the smears were taken by the practice assistant (a member of staff with specific medical and administrative training), often during specially organized screening times. In addition, all of the general practices in this study have set up a system to monitor the follow up of women

with positive cytological smears. In the near future it is our intention to study the effect of the intervention on unnecessary double screening.

In order to set up a general practice based call system, it is necessary to select women according to age and general practitioner. At present in the Netherlands, there is no central registration system by which women can be selected according to the general practice with which they are registered. A practice's computerized age-sex register could therefore be used. A postal survey in 1992 showed that since the start of the project, a considerable percentage of general practices had become computerized.²⁴

This study shows the clear effect of a personal invitation signed by a woman's general practitioner. In addition to this effect there is the effect of a reminder. The question arises as to who is responsible for sending reminders to non-attenders. In this study, the general practitioner who invited the women and also organized the smear to be taken also organized the reminder system as the general practitioner was aware of who had been invited and could thereby monitor responses. But, if different partners are involved in inviting women for screening and taking smears, as in the Dutch national call system, organizing a reminder system becomes more complicated, and few regional health authorities in the Netherlands have such a system. If call systems are set up within general practice, it seems more practical for the general practitioners to set up reminder systems.

The results from the first year of the study show that a general practice call system for cervical cancer screening produces a higher attendance rate than a national call system. That women in older age groups were as likely to attend is an important finding. It seems therefore that there are major advantages in a general practice based call system; the final three-year results of this study should offer more insight into this.


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