

Effectiveness of a call/recall system in improving compliance with cervical cancer screening: a randomized controlled trial

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Abstract

Objective: To determine the effectiveness of a simple call/recall system in improving compliance with cervical cancer screening among women not screened in the previous 3 years.

Design: Prospective randomized controlled study.

Setting: Two family medicine clinics (1 urban, 1 rural) affiliated with Memorial University of Newfoundland, St. John's.

Participants: A sample of women aged 18–69 years who were listed as patients of the clinics but who had not had a Papanicolaou test (Pap test) within the 3 years before the start of the study. Of 9071 women listed as patients 1360 (15.0%) had not undergone screening in the previous 3 years. A random sample of 650 were selected, 209 of whom were excluded because they had had a hysterectomy, had had a recent Pap test, had moved or had records containing clerical errors. This left 441 women for the study.

Intervention: The 221 women in the intervention group were sent a letter asking them to seek a Pap test and a reminder letter 4 weeks later. The 220 in the control group were sent no letters.

Main outcome measures: Number of women who had a Pap test within 2 months and 6 months after the first letter was sent.

Results: Within 2 months, more women in the intervention group than in the control group had been screened (2.8% [5/178] and 1.9% [4/208] respectively). There was also a difference between the overall proportions at 6 months (10.7% [19/178] and 6.3% [13/208] respectively). None of the differences was statistically significant.

Conclusion: A letter of invitation is not sufficient to encourage women who have never or have infrequently undergone a Pap test to come in for cervical cancer screening. The effectiveness of added recruitment methods such as opportunistic screening by physicians, follow-up by telephone and the offer of a specific appointment should be evaluated.

Résumé

Objectif : Déterminer l'efficacité d'un système simple d'appel et de rappel pour améliorer l'assiduité à des tests de dépistage du cancer du col utérin chez les femmes qui n'ont passé aucun test de dépistage depuis 3 ans.

Conception : Étude prospective randomisée et contrôlée.

Contexte : Deux cliniques de médecine familiale (une en milieu urbain, une en milieu rural) affiliées à l'Université Memorial de Terre-Neuve, à St. John's.

Participants : Un échantillon de femmes de 18 à 69 ans figurant sur les listes de patientes des cliniques, mais qui n'avaient pas passé de test de Papanicolaou au cours des 3 années précédant le début de l'étude. Des 9071 femmes figurant comme patientes, 1360 (15,0 %) n'avaient pas passé le test depuis 3 ans. Un échantillon aléatoire de 650 femmes a été constitué, 209 de ces dernières en étant par la suite exclues parce qu'elles avaient subi une hystérectomie ou, récemment, un test de Papanicolaou, avaient déménagé ou que leur dossier contenait des erreurs cléricales. L'échantillon disponible pour l'étude comptait donc 441 femmes.



Evidence

Études

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Intervention : Une lettre a été envoyée aux 221 femmes du groupe d'intervention, les invitant à passer le test de Papanicolaou; une lettre de rappel leur a été envoyée 4 semaines plus tard. Aucune lettre n'a été envoyée aux 220 femmes du groupe témoin.

Principales mesures de résultats : Le nombre de femmes qui ont passé un test de Papanicolaou dans les 2 à 6 mois suivant l'envoi de la première lettre.

Résultats : Dans les 2 mois, un plus grand nombre de femmes du groupe d'intervention que de femmes du groupe témoin avaient subi un test de dépistage (2,8 % [5/178] et 1,9 % [4/208] respectivement). Les proportions globales, après 6 mois, étaient également différentes (10,7 % [19/178] et 6,3 % [13/208] respectivement). Aucun des écarts n'était statistiquement significatif.

Conclusion : Une lettre les invitant à passer le test de Papanicolaou ne suffit pas à inciter les femmes qui n'en n'ont jamais passé, ou qui ne l'ont passé que rarement, à se rendre passer un test de dépistage du cancer du col utérin. Il y aurait lieu d'évaluer l'efficacité de méthodes supplémentaires de recrutement, par exemple, le dépistage opportun par des médecins, un suivi téléphonique et l'offre de rendez-vous fixés d'avance.

Cervical cancer is curable if detected early. Older women who have never or infrequently had a Papanicolaou test (Pap test) are at greatest risk of invasive cervical cancer, but they are the least likely to undergo screening. For 4 of the 5 years from 1992 to 1996, the estimated age-standardized incidence rates of cervical cancer in Newfoundland (10 to 16 per 100 000 women) were higher than the national rates (6 to 8 per 100 000 women).¹ In 1996 cervical cancer was the fifth ranked form of newly diagnosed cancer among Newfoundland women (excluding nonmelanoma skin cancer).¹ Newfoundland teenagers have had a consistently higher fertility rate² and higher rates of sexual intercourse³ than the rest of Canada. Early sexual activity, with the opportunity for a greater number of sexual partners, is thought to be a major contributor to the higher rates of cervical cancer. Newfoundland's higher incidence of cervical cancer requires increased vigilance to recruit as many women as possible for cervical cancer screening.

Guidelines issued from the National Workshop on Screening for Cancer of the Cervix, held in Ottawa in November 1989, recommended that population-based information systems be established to ensure that all women aged 18 and over who have had sexual intercourse be encouraged to undergo screening and to be rescreened every 3 years to age 69.⁴

Currently, there are women who are being overscreened (annual tests). However, there are also women who are being underscreened. In many studies this latter group has been found to be disproportionately older, less educated and more likely to be living in a rural area than those adequately screened.⁵⁻⁹ A number of studies have looked at call/recall systems to encourage women to undergo screening. In 2 series of retrospective audits of general practices in the UK, the number of smears taken sig-

nificantly increased following the establishment of active recall systems.^{10,11} Several Australian studies showed an increase in attendance for screening in response to a written invitation.^{12,13}

This study was done to determine the effectiveness of a simple and relatively inexpensive call/recall system in encouraging female patients who had not had a Pap test within the preceding 3 years to come in for screening. This type of system was one most likely to be used in a population-based screening program in this province.

Methods

The cooperation of the Newfoundland Cancer Treatment and Research Foundation was solicited before the development of the study proposal. The project was reviewed and approved by the Human Investigation Committee of the Health Sciences Centre, the Discipline of Family Medicine, Memorial University of Newfoundland, and the foundation.

The study was conducted at 2 family medicine clinics (1 urban, 1 rural) affiliated with Memorial University of Newfoundland. The Family Practice Unit is an urban group practice located within a teaching hospital in St. John's. The Newhook Clinic is a rural group practice in the community of Whitbourne (population 1210), which is 89 km from St. John's. Both clinics had computerized patient records.

All Pap test results in Newfoundland are registered centrally with the Provincial Cytology Registry, which is the responsibility of the Newfoundland Cancer Treatment and Research Foundation. All registrations since 1985 have been entered into a computer database. Five laboratories are currently involved in the reporting; the smears from the 2 study areas are read at the largest labo-



ratory. The registry follows up abnormal results with a reminder letter to the physician if there is no subsequent report within 3 months. If the smear is unsatisfactory, the registry follows up at 6 months. In each case, the registry notes in the letter the responsibility of the physician for proper follow-up of the patient; there is no further follow-up by the registry.

Patient selection

There were 9071 women aged 18–69 years who were on the patient lists of the 2 clinics as of November 1992. These lists were matched, with the use of the health insurance numbers, to the list from the Provincial Cytology Registry. Of the 9071 women 7711 (85%) had had a Pap test within the 3 years before the start of the study period. The national workshop recommended that women with persistent cytologic abnormalities be placed under active management. We excluded 58 women who, according to the registry's records, had persistent cervical intraepithelial neoplasia (CIN I, II or III) or benign atypia. Of the 1302 remaining records of eligible women, we randomly selected 650 using computer-generated numbers. In following the workshop's recommendation that women be dropped from screening programs if they have had a complete hysterectomy for documented benign conditions, we excluded 75 women who met this criterion. We excluded another 134 women because they had had a Pap test since the time the clinic and registry lists were matched (13 women), had moved (73) or had records with clerical errors (48). The remaining 441 women were randomly assigned to either the intervention or the control group (Fig. 1).

Final matches of the intervention and control group lists with those of the registry were made 9 months after the end of the study.

Intervention

Personal letters of invitation and recall were sent on the letterhead of the Provincial Cytology Registry and individually signed by the coinvestigators. The letters were drafted by the investigators and adjusted for a grade 8 reading level. These drafts were reviewed by the Rabbittown Learners Group, a neighbourhood literacy group, and revised accordingly. Letters were sent in January 1993, with reminder letters sent 4 weeks later. Women in the control group were not sent any letters.

Data analysis

Calculation of the sample size was based on reports of the Provincial Cytology Registry. It is estimated that 70% of Newfoundland women aged 18–69 are screened over 3

years.¹⁴ Of the remaining 30% who have never been screened or who are screened at intervals longer than 3 years, it was estimated that 5% would present on their own for screening within 6 months. For the intervention group we needed at least 159 women to detect an increase to 15% at 5% level of significance and 80% power.

The χ^2 test was used to compare the groups at baseline in terms of age and geographic distributions and date of their last Pap test. The χ^2 test and the Fisher's exact test, where appropriate, were used to analyse the relation of age and residence to compliance with screening at 6 months between the 2 groups.

Results

The age distribution, residence and timing of the last Pap test did not differ significantly between the 2 groups (Table 1).

Of the 221 letters sent to women in intervention group, 32 were returned because the person had moved with no forwarding address; these women were excluded from the final analysis. One could assume that the same proportion of women in the control group would be unreachable by mailed letter and thus could be excluded before analysis, but this was not done since actual figures cannot be obtained.

The final match with the registry's records revealed that 23 women (11 in the intervention group, 12 in the control group) had had a Pap test from the time of the initial match between the practice and registry lists and the mailing of the letters. These women were excluded from the final analysis (Fig. 1).

Within 2 months after the first letter was mailed, a larger proportion of women in the intervention group than in the control group came in for screening (2.8% [5/178] and 1.9% [4/208] respectively). There was also a difference between the overall proportions at 6 months (10.7% [19/178] and 6.3% [13/208] respectively). The differences at 2 months and 6 months were not statistically significant ($p = 0.73$ and 0.16 , respectively).

Table 2 gives the proportion of women in the 2 groups who came in for screening within 6 months after the first letter was mailed, according to age and residence. The differences were not statistically significant for any of the variables compared.

Discussion

The level of screening within 3 years in the 2 practices in our study (85%) was much higher than the 70% predicted. For cervical cancer screening to have a substantial impact on cumulative incidence, regular screening of a substantial portion of the population is required.¹⁵ Al-

though there has been some variation in implementation of the 1989 guidelines,¹⁶ a 3-year interval is now recommended in most of Canada.

In a practice with a high screening rate, such as the 2 in our study, one would expect women who have never been screened and those who have not been screened within 3 years to be more resistant to an invitation than those in a

practice in which screening is less effectively promoted and less actively requested by women.

In our study 20 of the women in the 2 groups had visited the practices during the study period but did not have cervical screening. Cohen,¹⁷ in a case-control study in Manitoba, found that although women with invasive cervical cancer were less likely than control subjects to have

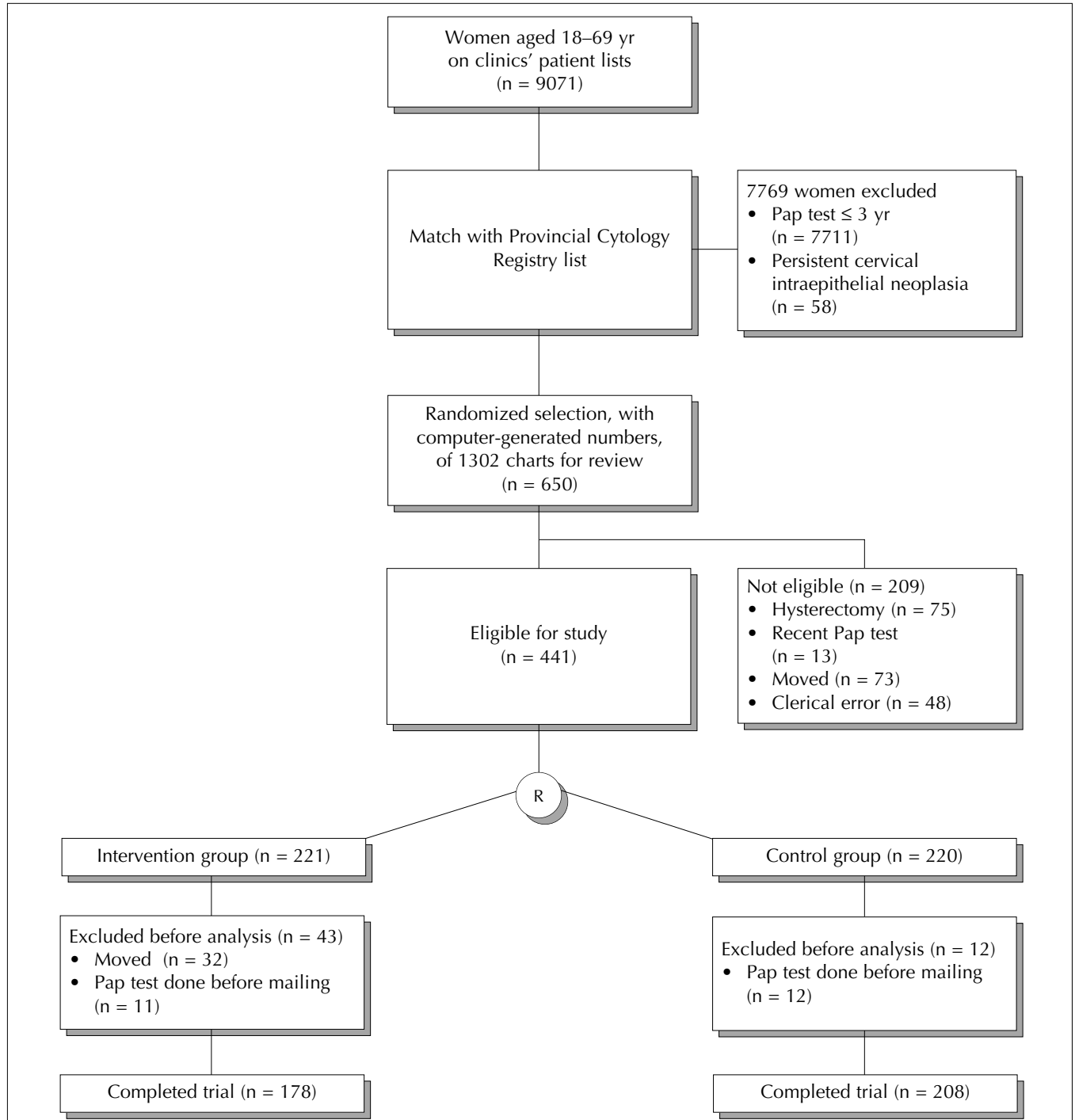


Fig. 1: Profile of randomized controlled trial of call/recall system for cervical cancer screening. See Methods for inclusion criteria. R = randomization.



visited their physician, the proportion who did not use the health care system was much smaller than the number of untested women. These results are supported by those from studies in 2 US cities, which showed that the proportion of women attending outpatient clinics¹⁸ or making contact with a physician¹⁹ was greater than the proportion being screened. Although success in promoting screening during office visits has been variable, these results suggest that physicians need to do opportunistic screening during visits for other reasons and to include cervical screening as part of the general checkup.

Women who are not coming in for smears may be resistant to the idea and thus may require more aggressive recruitment efforts. A study by Wilson and Leeming²⁰ showed that middle-aged women who had not had a Pap test responded more to an offer of a specific appointment than to an open invitation. Encouraging underscreened women to come in for screening obviously requires more effort than a simple letter. Follow-up with reminder letters and telephone calls as well as the offer of a specific appointment may be required for recruitment to be effective.

In our study, a greater number of women than expected had moved out of the practice areas. The problem of tracking patients has been identified by other investigators. For example, Beardow and associates²¹ found that 320 of 687 recorded addresses used to send invitation letters were not current. City and telephone directories were used to track the women in our study who could not be reached or had moved. We found that most of them were students in the urban practice. Limiting the study to women who had visited the clinic 2 or 3 times in the previous 2 years would have provided a more stable population. However, this is a problem that would be encountered in any practice or population-based program.

Having to exclude 23 women from the study because they had had a Pap test between the time of the registry

match and the mailing of the letter was unavoidable. There can be considerable lag time between the time of the test and its final registration, particularly if reports are batched from hospitals and clinics. This potential loss of subjects was not adequately considered in the calculation of sample size.

Conclusions

Even though more women who were sent a letter of invitation than those who received no letter came in for cervical cancer screening, the numbers were small and the differences were not statistically significant.

The 2 practices in our study are teaching practices. These physicians would presumably be more likely to prompt for testing than those in nonteaching practices. Therefore, the 15% of women in the 2 practices who had never been screened or had not been screened within 3 years may be more resistant to recruitment efforts than those in other practices where less attention may be paid to cervical cancer screening.

Our findings suggest that a letter of invitation is not enough to encourage this group of women to come in for screening. Follow-up with reminder letters and telephone calls as well as more emphasis by physicians to do opportunistic screening during visits for other reasons may improve recruitment. Concurrent community-based strategies are likely to be needed.

A letter may be cost-effective in a government agency-sponsored or practice-sponsored program to remind women to come in every 3 years who now come in annually. Our study suggests that a letter may not be enough to get women who are underscreened or never screened to attend for cervical smears.

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Table 1: Characteristics of women in Newfoundland entered into randomized controlled trial of call/recall system to enhance compliance with cervical cancer screening

Characteristic	Group; no. (and %) of women	
	Intervention <i>n</i> = 221	Control <i>n</i> = 220
Age, yr		
≤ 40	135 (61.1)	139 (63.2)
> 40	86 (38.9)	81 (36.8)
Residence		
Urban	146 (66.1)	154 (70.0)
Rural	75 (33.9)	66 (30.0)
Time of last Pap test		
≤ 5 yr	60 (27.1)	60 (27.3)
> 5 yr	28 (12.7)	27 (12.3)
No record of test	133 (60.2)	133 (60.5)

Table 2: Proportion of women who had a Pap test, by age and residence


Characteristic	Group; % (and no.) of women		
	Intervention <i>n</i> = 178	Control <i>n</i> = 208	<i>p</i> value
Age, yr			
≤ 40	6.9 (7/101)	6.9 (9/131)	0.81
> 40	15.6 (12/77)	5.2 (4/77)	0.06
Residence			
Urban	8.7 (9/103)	5.6 (8/142)	0.49
Rural	13.3 (10/75)	7.6 (5/66)	0.40



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