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The Telephone: An Overlooked Technology for Prevention in Family Medicine

SUMMARY

Annual influenza vaccination has long been recommended for the elderly population. Despite this recommendation, immunization rates have remained very low. This study measured the effects of two approaches to the provision of influenza immunization to the 65-years-and-over age group in a single family practice. The "drop-in" group (N=123) was informed of the availability of the vaccine at visits made during the vaccination period. The "phone" group (N=120) was notified of the availability of the vaccine by telephone and was invited to come in for the shot. An immunization rate of 50.8% for the "phone" group and 26.8% for the "drop-in" group was obtained (P=.0002). These results contrast strongly with the overall immunization rates of 5.9% and 9.5% obtained during the previous two years, when no active immunization policy was in place. The telephone approach was found to benefit the type of patient at greatest risk from influenza: the chronically ill and the aged. It is clear that having a defined immunization policy substantially improves the provision of influenza vaccination. The authors discuss the effectiveness and practicality of these approaches to the delivery of influenza vaccine and their applicability to other forms of prevention in family medicine. (*Can Fam Physician* 1987; 33:1997–2001.)

RÉSUMÉ

Le vaccin annuel contre la grippe est depuis longtemps recommandé pour les personnes âgées. Malgré cette recommandation, les taux d'immunisation sont demeurés très bas. Cette étude mesure les effets de deux approches à la vaccination contre la grippe chez les gens de 65 ans et plus dans un contexte de pratique familiale. Ceux qui se présentaient sans rendez-vous préalable (n=123) étaient informés de la disponibilité du vaccin lors de visites faites pendant la période de vaccination. Un autre groupe que nous avons rejoint par téléphone (n=120) fut informé de la disponibilité du vaccin et invité à se présenter pour y recevoir le vaccin. Nous avons obtenu un taux d'immunisation de 50.8% pour le groupe rejoint par téléphone et de 26.8% pour celui « sans rendez-vous » (P=.0002). Les résultats contrastent fortement avec les taux globaux d'immunisation de 5.9% et de 9.5% obtenus au cours des deux années précédentes alors qu'il n'existait aucune politique active d'immunisation. L'approche par téléphone s'est avérée avantageuse pour les patients à plus haut risque de contracter la grippe: les malades chroniques et les personnes âgées. Il est évident que l'élaboration d'une politique d'immunisation claire améliore substantiellement le taux de vaccination contre la grippe. Les auteurs discutent l'efficacité et le caractère pratique de ces approches à la vaccination contre la grippe et leur applicabilité aux autres formes de prévention.

Key words: elderly, influenza vaccine, preventive medicine, telephone

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ANNUAL INFLUENZA vaccination in the elderly has been recommended by public health and immunization agencies in North America for over two decades.[1,2] Its annual use is advocated by the Health Maintenance Guide, formulated by the College of Family Physicians of Canada in 1983.[3] Numerous studies have demonstrated the effectiveness of the vaccine in reducing morbidity and mortality in high-risk groups, including the elderly, especially during epidemics.[4–8] In spite of all this attention, it is believed that less than one-fifth of the elderly population in Canada and the United States receives influenza vaccination each year.[1,9–11]

In the past, concerted attempts have been made to increase the influenza

immunization rate. In response to a predicted "swine" influenza epidemic in 1976, a mass influenza-immunization campaign was conducted in the United States. As a result influenza vaccine delivery rates rose to 40% in high-risk groups (the elderly and the chronically ill) and to 25% in the general population.[2, 12] "Reminder Postcard" studies have increased immunization rates in certain local areas. In one successful study a 59.7% vaccination rate was recorded for patients who had received the postcard as compared to a rate of 30% for those who had not.[13] Other postcard studies have been much less successful.[12, 14] Recent Canadian studies have investigated the effect of postcards and the telephone reminders on the influenza immunization rate. Frank and his colleagues obtained a rate of 43% after using reminder postcards. This rate rose to 55% when a follow-up telephone call was made to non-responders.[15] McDowell and his colleagues (1986) obtained rates of 35.1% and 37% for patients reminded by postcard and telephone respectively, compared to a rate of 9.8% for the control group.[16] The long-term effects of these influenza-vaccine promotions is unclear.

The main objective of this study was to compare two methods of raising the influenza immunization rate of the elderly population of the practice. To achieve this objective the following approaches to influenza vaccine delivery were undertaken.

The telephone is an inexpensive but overlooked technology that can be used to enhance immunization. To assess its effect, patients in the phone group were contacted by telephone as an initial outreach measure.

To assess the impact of simple office policies, the drop-in group was formed. In this group no outreach measure was undertaken, but the internal office environment was used to promote influenza vaccination: reminder stickers were affixed to patient charts, a bulletin was posted in the waiting room, and the advantage of influenza vaccine was routinely discussed with the elderly during their visits to the Family Medical Centre.

The physicians involved in the study investigated the effectiveness and practicality of these approaches to the provision of influenza vaccine. They also examined the characteristics of those patients in each group who received the vaccine.

Method

The study was conducted from mid-September to December 1985, in a single family practice at the Victoria Family Medical Centre (FMC), a teaching practice affiliated with the University of Western Ontario, in London, Ontario. The "Health Care Team" involved in the study consisted of the staff physician, two physicians in residency training, a registered nurse, and registered nursing assistant.

The study population included all active registered patients in the practice, 65 years or older. Patients chronically hospitalized or in nursing homes were excluded from the study, as were those who were unable to communicate by telephone or who were housebound.

During previous years no outreach measures had been taken in the practice nor had there been any promotion of internal influenza vaccine. While the staff physician acknowledged the value of influenza vaccination for the elderly, no specific policies were in place. Prior to the study, patients were vaccinated against influenza if they specifically asked for the procedure, or if the physician believed it to be particularly valuable.

The study population was divided into two groups, the "Drop-In" group and the "Phone" group. After a random start patients were alternately assigned to each group, though related patients and those living in a single household were kept in the same group.

A brightly coloured sticker was applied to the charts of the entire study population as a reminder to the health-care team that the study was under way and that they were expected to promote the flu vaccine.

All collaborators in the study met and agreed on a similar approach. The patients would be told, whether by telephone or in the office, that the vaccine was available, and that they would be given a shot if they wished. Moreover the collaborating physicians agreed on responses to be given to questions about side-effects and the value of immunization.

Patients in both study groups who visited the FMC during the immunization period were treated the same way. On entering the examining room, the patients were informed by a nurse or a nursing assistant that the vaccination was available. At the end of the visit, the physician addressed any unresolved questions about the immunization, and the shot was given if the patient wished. Flu shots were not given to patients with an allergy to eggs or to patients who had reacted to previous influenza immunization; they were postponed for those patients suffering an acute febrile illness. A single handmade 8" × 11" advertisement, bearing the caption "Be Keen About Flu Vaccine", was posted in the waiting room.

The only methodological difference shown the two groups was that some patients in the phone group received a telephone call. If a patient visited the FMC before the staff phone call was made, no call was deemed necessary. The telephone calls were made in approximately equal numbers by the staff physician, a registered nurse, and a registered nursing assistant; the duty of phoning was assigned in turn, systematically, with random start. Each telephone caller had been associated with the practice for at least five years. The structural design of the study is illustrated in Figure 1.

Each week the phone callers were provided with a call sheet of five names. If the caller made the assigned calls before the week was up and asked for another list, it was provided. The calls were made during office hours. Patients were told of the availability of the influenza vaccine and informed that they could receive it during a regular visit ("appointment") or schedule a time with the nurse ("clinic"). If the phone was not answered after seven rings, the call was considered a failed attempt. A busy signal was documented, but was not considered an attempt. A maximum of three phone attempts were made to each household, and the attempts were always spaced at least a half day apart. No further follow-up phone calls were made.

Following the immunization period, the collaborators reviewed all charts. The analysis was done with patients in their originally assigned group, whether or not they had received a phone call. Thus the project was an "intention-to-treat" analysis, the type which has been generally

acknowledged as the most appropriate for randomized trials.[17]

Definitions

For the purpose of the study the following definitions were standardized. A "chronic illness" was defined as a disorder of more than three months duration of the cardiovascular, pulmonary and/or renal systems; metabolic disease; severe anemia; and/or compromised immune function. Patients subject to chronic illness are thought to be at moderate to high risk of serious illness from influenza as compared to the general population.[1, 18, 19] Hypertension was included in this category if the patient required anti-hypertensive medication for control of the condition. A participating physician determined the number of chronic illnesses from which a patient suffered, whether none, one, or two or more.

An "adverse reaction" was defined as a reaction to either a medication or a vaccination (of any kind) as documented on the patient chart. "Previous influenza vaccination" was defined as influenza vaccination given in 1983 or 1984. For documentation of "years attending the centre" patients were grouped into categories of fewer than 15 or 15+ years. Under the notation "household composition" patients were classified as being alone, or living with a spouse or other

Results

The two study groups were compared in relation to a number of demographic and health factors: sex, mean age, marital status, household composition, mean number of visits to the centre, years attending the Centre, adverse reactions to medication, the presence of a chronic illness, and the number of chronic illnesses. The analysis did not show a significant difference between the study groups for any of these factors.

Table 1 illustrates an overall influenza immunization rate of 38.7% for the entire study population. This figure represents a seven-fold increase over 1984 levels. It is, however, the combined rate of the two study groups. A 50.8% immunization rate was recorded for the Phone group compared to a rate of 26.8% for the Drop-In group. The influenza immunization rates of the Phone group and the Drop-In group were increased over the previous year by 43.2% and 22.7% respectively (P= .0002).

In each study group patients who received the influenza vaccination were compared to those who did not receive it. The significant findings are illustrated in Table 2. Previous influenza vaccination and a greater number of chronic illnesses were associated with influenza vaccination in both groups. The presence of a chronic illness was associated with vaccination in the Drop-In group, and there was a trend toward significance in the Phone group. Increasing age and a greater number of visits to the FMC were significantly associated with flu vaccination, but only in the Phone group. No other associations were found.

Telephone survey results

Eighty-eight of the 120 patients in the Phone group (73.3%) were contacted by telephone. Patients in the Phone group did not receive a call if they happened to visit the FMC before it was their turn to be telephoned (22 of 120). Excluding these, the actual telephone contact rate was 89.9%. Only 10 patients remained unnotified after three attempts. A comparison of the patients who were contacted with those who were not showed no significant differences in demographic or health factors.

In total, 132 phone calls (excluding busy lines) were made by the three callers. Most (77.6%) of the patients called were contacted on the first tele-

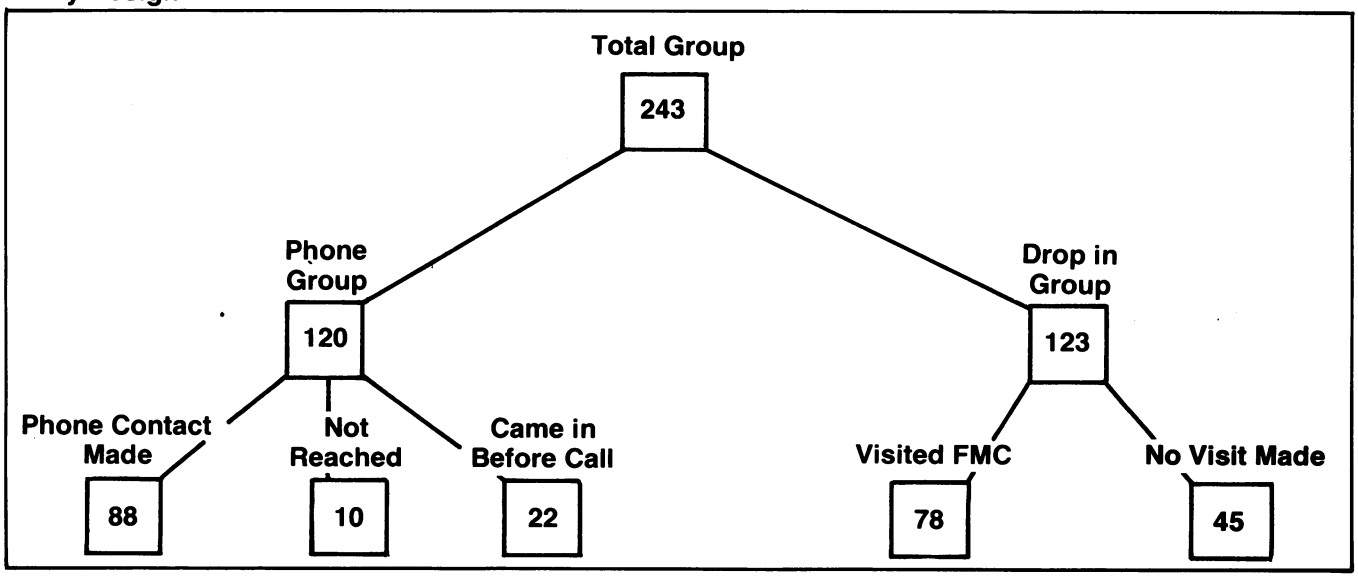
Table 1

Influenza Immunization Rate for Those Age Eligible

	% Immunized			% Immunized
Year	Phone Group	Drop in Group	P Value	Overall
1983	10.9(n=92)	8.2(n=98)	.7000	9.5(n=290)
1984	7.3(n=109)	4.5(n=111)	.5400	5.9(n=220)
1985	50.8(n=120)	26.8(n=123)	.0002	38.7(n=243)

Figure 1

Study Design



phone call. The proportion of patients contacted rose to almost 90% after three calls. In only three instances was a patient's phone busy.

The project required relatively little staff time. The physician made his calls over a six-week period, attempting, on average, one call per day. The nursing staff averaged two calls per day over three-week calling period.

There was no significant difference in the influenza vaccination rate of those patients called by the physician, the nurse, or the nursing assistant. There was, however, a trend towards higher rates in those called by the nursing staff.

For the most part vaccination was given by "appointment" on a visit to the doctor. Twenty of the 94 patients receiving shots (21.3%) were vaccinated by the nursing "clinic". Those contacted by telephone made much greater use of the clinic (P= .0003).

Discussion

Clearly, an immunization policy substantially improves the provision of influenza vaccination to the elderly. Immunization rates of 50.8% for the Phone group and 26.8% for the Drop-In group represent increases of 43.2% and 22.7% respectively over the previous year's levels.

A simple office immunization policy with no outreach measures, as represented by the Drop-In group, resulted in the immunization of over one-quarter of the study population. This policy approach, although increasing the immunization rate sixfold, was limited by its design. Only those visiting during the vaccination period could receive the shot. In this study, 63.4% of the Drop-In group visited the FMC during the vaccination period, and 42.3% of these were immunized. Although this approach has its limitations, it is easy to implement and entails no expense.

McDowell et al. obtained similar figures for their "physician reminder" group. In this group the physician, rather than the nurse, as in our study, inquired about influenza vaccination. The participants obtained immunization rates of 22.9% overall, with a 43.5% rate for those the doctor actually saw.[16]

Attempting to reach the entire at-risk population requires the use of outreach measures. Sending postcards to remind patients about influenza vaccination has been extensively studied in the past.[1, 6–8, 14] Reminding patients by telephone has been studied only recently by McDowell et al., who obtained a telephone-group immunization rate of 37%.[16] The 50.8% immunization rate that was recorded in this study has confirmed that the telephone is an effective alternative as an instrument for raising the rates of influenza immunization. The substantial increase in vaccination coverage achieved by using the telephone in this study is similar to that found in the successful postcard-reminder studies carried out in the United States and Canada.[1, 8] The decision on which tactic to employ may thus depend on cost factors and office logistics.

Postcard studies are by their nature more expensive to conduct. Material and postage costs may be in the neighbourhood of 40 cents per letter.[20] For an elderly population of 250 patients this would mean an expense of Cdn. $100.00. The use of the telephone, on the other hand, entails no added expense, as the telephone is necessary to the normal functioning of the medical office.

Preparing and distributing postcard reminders require manpower hours. The telephone approach also requires manpower hours, but distributed during office time and shared by staff members, the actual burden is quite reasonable. Based on the telephone survey data, three people would have to make only two telephone calls per day for six weeks to cover 250 elderly patients. If a single nurse or secretary were assigned the task, it would require making six calls per day for six weeks. Participants in this study found that the nursing staff and the physician could easily place their calls at low work periods during the day.

The telephone approach may have other advantages. The calling list does not depend on successful delivery of the mail or on a correct mailing address. Over 90% of the patients in the Phone group were contacted. Any errors in telephone numbers can be corrected immediately. Moreover the human element involved in telephone contact would seem to have a deeper effect than an impersonal computer-printed message. The written message requires that the recipient have adequate vision and literacy; a phone caller can judge the patient's understanding by his/her response. The telephone also permits the patient to ask questions and get feedback.

The telephone calls appeared to influence patients who were older, chronically ill, and visited the FMC more frequently. The reason for these patients' higher response rate is uncertain. It may represent their greater likelihood of being contacted by telephone, or a stronger effect on persons with declining faculties, or their closer dependence on the FMC. In any event the telephone contact affected the type of patient (the sick and aged) at greatest risk from influenza disease and thus in greatest need of influenza immunization. A higher response rate by age selection process was not found in the Drop-In group or in one postcard study that looked for it.[15] The effect of chronic illness on influenza-vaccine response rates has not been examined in post card studies.

Table 2

Demographic and Health Factor Associations by Study Group

* Factor	Phone Group	Drop in Group
Previous Influenza Vaccination	P≤.0001	P≤.001
Age (Older)	P≤.01	N.S. (.763)
Presence of a Chronic Illness	P=0.56	P≤.01
Number of Chronic Illness	P≤.05	P≤.05
Mean Visits to FMC	P≤.001 (1983) P≤.01 (1984)	N.S. (1.67) N.S. (.649)

N.S.=not significant (P >.05)

* all other factors (sex, marital status, household composition, years attending FMC and prior adverse reaction) were N.S.

The study determined that previous influenza immunization was a positive factor affecting an individual's immunization status in both groups. This finding has been documented for the postcard approach, also.[15] It may imply a general satisfaction with the vaccine. Moreover, it may indicate a "carry-over" effect, suggesting that it is easier to ensure yearly re-immunization than initial immunization.

The availability of the nurse to provide the shot at a time that was agreeable to the patient was useful. It served the Phone group predominantly, providing patients with the option of receiving the influenza shot without having to make a doctor's visit. It was also useful when vaccinations had to be postponed because of a febrile illness.

The telephone approach may be useful in other areas of prevention such as Pap-smear recall, annual health examinations, other immunizations such as the pneumococcal vaccine, occult blood and signoid re-examination. A phone-call system might even be flagged by a daily computer printout that notified staff of preventive concerns. The telephone represents a familiar and readily available technology of which the preventive capabilities have been overlooked and underused. ◉

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